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Editorial

Recently issued California oil statistics for October gave scant comfort to West Coast oil men who are struggling to meet a continually mounting demand for petroleum products which is far in excess of production.

While demand for products was lower by 5000 barrels a day than the previous month, it was necessary to draw 129,000 barrels daily from storage. Fuel oil demand was up 27,000 barrels daily, gasoline demand down 21,000 barrels daily. Gasoline stocks dropped another million barrels during the month.

It is becoming obvious, even to civilian motorists, that California cannot continue to meet existing demand for motor fuel on the West Coast much longer. While everything possible is being done by the oil companies to supply growing demands of the military and essential civilian demand, it is clearly evident that non-essential driving, presently practiced in considerable volume, must be eliminated. The California Oil and Gas Association has made a good move in public education by placing full page advertisements in West Coast newspapers calling attention to the critical situation. Suppliers have curtailed their deliveries to service stations and in some cases the consumer has been given the potent reminder that he must curtail his driving when he has found his dealer with an empty tank.

The California oil industry is carrying a pretty heavy load. It is endeavoring to supply practically all of the petroleum products for the war in the Pacific and at the same time provide sufficient civilian motor fuel in the five West Coast states which rely more heavily on automobile transportation than any other section of the country. Gasoline stocks at this writing are only about 3,000,000 barrels above the minimum working level calculated for this area.

To the oil man it is obvious that the basic problem is how to increase the state's production of crude oil. The PAW advises that 2400 wells must be drilled in California next year, far more than were ever drilled before in this area. Wildcatting will certainly proceed unabated and there is always the possibility that new reserves will thereby be discovered in appreciable volume. This is the hope to which the industry clings.

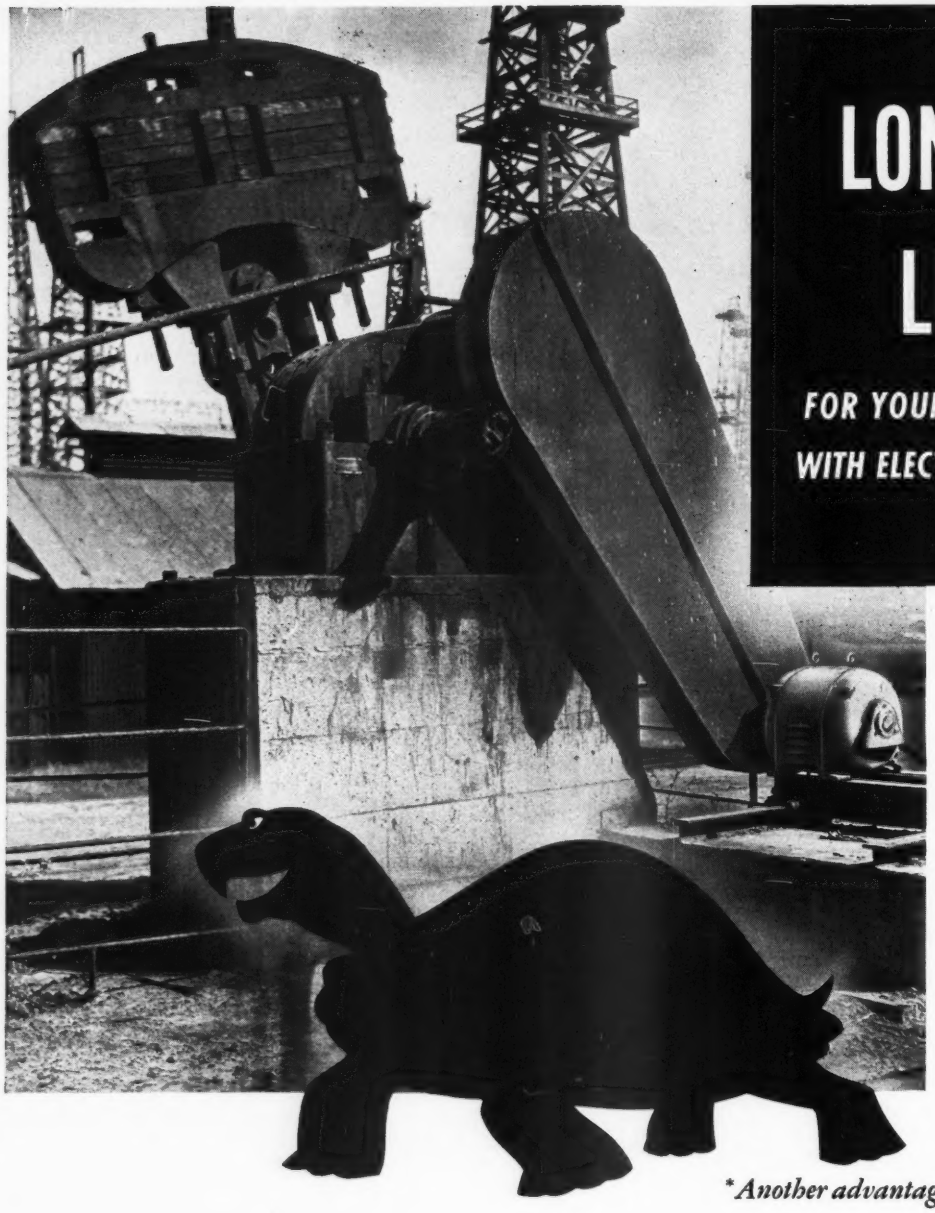
Meanwhile, it may be said in passing, production from the great Naval oil reserve in the Elk Hills continues along at the undeniably modest rate of 15,000 barrels a day.

Noticeable headway has been made in solving the California oil industry's manpower problem since the West Coast Manpower Plan became effective on Sept. 15. A further step in the right direction was taken recently with the establishment in Los Angeles of a central office for the manpower sub-committee of the Petroleum Industry War Committee.

The sub-committee is composed of the personnel managers of a number of the larger companies and representatives of the independent refiners, independent producers and drilling contractors. A recruitment agency has been set up to help the oil industry secure needed workers. Employment interviewers will be stationed in the more active U. S. Employment Service offices in the Los Angeles area, the San Francisco Bay region and the San Joaquin Valley.

The success of the plan will be in proportion to the cooperation between oil industry employers and the newly established office. The office is located in the Subway Terminal Building, with J. G. Fulton in charge as acting manager. Questionnaires have been mailed to employers, who should lose no time in filling them in and returning them to the committee so that it may have information regarding present manpower needs and an estimate of needs for the next two months.

The oil industry tackled its manpower problem none too soon. The situation might not have become as critical had something been done sooner. However, excellent headway has been made in a short time considering that other war industries have been at the job for many months, but continue to have the problem with them. A few people in the oil industry by expending a lot of effort, have done wonders. The effort is beginning to pay off.



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Reports From Washington

Attention of the oil industry will be focused on the House of Representatives Monday, December 13, when the House for the first time will vote on a proposal to increase the price of crude petroleum. With 223 signatures on the petition discharging the House Banking and Currency committee from further consideration of the Disney bill, which would, if enacted, force crude price ceilings up an average of 70 cents a barrel, there appears little doubt but what affirmative action will be taken.

Few members of the House honestly believe that the bill, even after House approval, will be enacted into law. But the net result may, in the opinion of a majority of the members from the oil producing states, be satisfactory.

If approved by Congress as an individual measure, the bill is foredoomed to be vetoed by President Roosevelt. Only the most optimistic believe that it could be enacted over the veto, which requires a two-thirds vote of both the Senate and House. But the way will be paved for subsequent action which may finally force the Office of Price Administration to grant the long-sought price boost.

It has not been advertised too widely as yet, but the present price control expires June 30, 1944. This is only a little over six months away, and shortly after the holidays, Congress will have to start consideration of a new measure to replace the existing one. If the Congressional oil bloc has already proven that it can muster a majority of both the Senate and House for an oil price increase, it will be in a good position to demand a provision in the new price control act which would prohibit ceilings on crude under a certain level.

For this one issue only, Edward Jamieson is pinch-hitting for Carrington King who is enjoying a well earned vacation in Southern California.

Mr. Jamieson is one of the outstanding Washington correspondents, serving the interest of such papers as Houston Chronicle; San Antonio Express; Wichita Falls (Tex.) Record-News; Ft. Worth Star Telegram; New Orleans States; Nashville Tennesseean.

The Disney bill does not provide any specific price hike, but establishes a minimum, based upon index figures, under which the OPA would be prevented from fixing oil prices. This is similar to existing provisions in the price act fixing minimum ceilings for agricultural products.

Advantages of getting such a provision incorporated in the new price control measure is that the President would find it extremely difficult to veto the entire bill just to kill the oil price increase. He has no power to veto a single item in the bill.

Some members believe that by spring, to avoid adoption of the Disney bill as an amendment to the price control measure, the OPA and Economic Stablization Director Fred Vinson, will grant a smaller hike in crude prices. Added impetus toward the voluntary increase on the part of the Administration is likely, also, through an expected general increase in wage rates and other commodity prices, with a new stabilization line established for the old one which for all practical purposes has already disappeared.

What is going to happen to the Canol pipeline, refinery and distribution project in the Yukon? That is a question which has been asked on all sides since the sensational developments in the hearings before the Truman Investigating committee of the senate.

The Army appears determined to go ahead and complete the $138,000,000 project, although Petroleum Administrator Harold L. Ickes told the Truman committee that in his opinion, it means pouring good money after bad. Ickes suggested that the project be halted immediately, and some $30,000,000 which remains to be spent on its completion saved.

Such a recommendation is expected to be made by the committee in its report on the investigation, slated to be released very shortly, but the Army is not bound by committee reports. If the War Department wants to go ahead despite such a recommendation from the Truman committee, it is perfectly within its rights to do so. Only actual legislation by Congress could stop the projects if the Army insisted on proceeding.

Undersecretary of War Robert A. Patterson was so insistent upon the value of the project from a military standpoint during his testimony before the committee that there is little doubt but what he personally will want to ignore the committee report. Whether Lieutenant General Brehon Somervell, chief of the army service forces, has changed his mind on its value, will probably not be known for several weeks. General Somervell has been participating in the momentous conference with the United Nations' political and war leaders in Cairo

and Tehran, and no one has been able to get his reaction since the probe broke into the open.

Evidence accumulated by the Truman committee made it clear that the project, which will only supply 479 barrels of aviation gasoline daily as presently set-up, was the baby of General Somervell and Dean Frank Graham of the University of Kentucky Engineering school. Dean Graham, as a colonel, was General Somervell's boss in the first world war, and is now serving as the General's civilian advisor in this war.

General Somervell apparently accepted Dean Graham's recommendation, which the University professor admitted was connocted after a three-hour conference in Washington with two officials of Imperial Oil, Ltd., of Canada, and two officers of the Army the evidence made it doubtful that Undersecretary Patterson learned about the project for many months after it had been ordered.

Strongest indication that the army intends to go ahead with its completion despite the criticism from all sides was the disclosure that after eighteen months, the project had been submitted to the Joint Chiefs of Staff of the Army and received their approval. This was done on October 26, after the Congressional probe had started, and apparently was an afterthought to get necessary clearance from the top.

Aside from the length of time required to construct the project, its high cost and comparatively low production rate, most damaging evidence against its construction and completion were statements from reputable officials that California gasoline and oil could have been transported and distributed to the air bases in Alaska and Canada in much larger quantities and at a much cheaper cost under alternative plans.

Both Ickes and Deputy Petroleum Administrator Ralph K. Davies told the committee that by use of tankers, barges and possibly short distributing pipelines, adequate California produced products could be provided the armed forces in that area the year-around and at far less cost than the Canol project. Davies flatly declared that only one tanker, used one-fourth of the year, would be required to supply amounts equivalent to those which will be supplied by Canol. A memorandum uncovered by the committee which was written by Brigadier General Thomas Robins, then assistant chief of army engineers, also told General Somervell and Graham that by use of barges, etc., he could supply ten times as much oil to Alaska and Canada for one-tenth of the cost as by construction of the Canol project.

One thing appears certain, however. The contract under which Imperial Oil and the Canadian government would be able to take over the whole Canol project at the close of the war, with the United States left out in the cold, will be revised. Even Patterson admitted that this contract is now being studied with the probability of revision. It is likely that some provision will eventually be made whereby the United States will get a part of the oil produced at Norman Wells, discovered with American capital, after the war is over.

There was little mention of Standard Oil Company of California during the hearings, and apparently the company has satisfactorily shown that it is merely an operating agent for the project and had nothing to do with the project's initial conception.

As this is written, the Elk Hills matter remains in status quo. Officials of the Justice department, as well as members of the House Naval Affairs committee, which is conducting a new secret investigation of the whole situation, indicated that something should break soon.

The existing contract expires December 8 and some action will be necessary before that time. With no real settlement of the issue apparently ready yet, however, officials intimated that the contract may be given another short extension to permit additional time for the negotiations and studies.

Administrator Ickes is having a hard time holding the independent oil men who have been in the PAW since its inception. Ickes, who recently blasted former Price Administrator Leon Henderson for charging via radio that PAW is dominated by the major companies, is extremely anxious to keep as many independents in key positions as possible. But they are steadily leaving as the urgency of the PAW job lessens and their necessity for getting back into private business increases. Latest to go was Major J. R. Parten of Texas, who headed the division of transportation. Major Parten has long been considered one of the leading independent oil men, and both Ickes and Davies argued at length with him to remain. Ickes was forced to replace Parten with George A. Wilson, who was employed by the Standard Oil Company of Louisiana before entering PAW. Wilson is a capable official and is expected to be a good successor to Parten, who solved the eastern oil shortage due to transportation difficulties, but he is a major oil company representative.

PAW has advised the oil industry throughout the country that it can get excess critical materials to speed up construction of aviation gasoline plants and other special refining units at Los Angeles. Two of the major stockpiles of such materials, the Administration disclosed in a formal release, are located in Los Angeles and Houston. "Alert job personnel can pick up many items from these stocks and can, as a result, hasten the completion of plants and special refinery units now under construction," Davies said. Refiners and contractors desiring specific information regarding these stockpiles are advised to write to

(Continued on Page 8)

Standardization of Electrical Log Headings

W. L. Jarvis

The Texas Co., Los Angeles, Calif.; chairman, API California District Subcommittee on Core Analysis and Electrical Logging.

[a]Figures refer to REFERENCES

ABSTRACT

This recommended electrical-log heading has been designed to include as much of the pertinent available data as is feasible to record. It has evolved to this present condition through several stages, in each of which it was submitted to members of the companies represented by the committee for circulation among their engineers and geologists, and to the various logging companies. Consequently, it represents, as nearly as can be reached, a broad consensus of the California industry as to what a desirable heading should contain.

The California District Subcommittee on Core Analysis and Electrical Logging during the past year has been studying the problems incident to a standardized heading for electrical logs. The need for a common heading with some changes and additions to previous and present forms was realized in attempting to interpret old logs on the basis of information subsequently obtained. This was done from the point of view of making present-day interpretations more effective, and it was found that many pertinent data were lacking. The form set out herein is recommended for California practice, but it is suggested that the feasibility of adopting a national standardized form be given consideration.

With reference to drilling fluid, the kind of mud used has a distinct bearing on the properties of the mud and, in turn, on the nature of the recorded curves. For example, distinct differences in recorded results would occur with bentonite mud than would be obtained from a starch-base mud which is highly saline.[1a]

Data on the treatment of drilling mud are deemed to be important in regard to log behavior. It has been shown that, with the addition of normal amounts of tetrasodium pyrophosphate, the mud resistivity and resistivity of the mud filtrate may be reduced to as little as one-eighth of the original value. A change of sodium chloride from 50 grains per gallon to 500 grains per gallon has been found to result in fivefold changes in the magnitude of the resistivity.[1]

W. L. Jarvis

Weight of mud is an important item in that it affects filter loss and exerts some influence on the resistivity of the mud and filtrate.

Drilling muds and formation fluids are markedly affected by temperature.[1] For temperature ranges commonly encountered down to 12,000 ft., an approximate change of fivefold may occur in resistivity for certain kinds of mud. Consequently, it is of vital importance to know the temperature at which the resistivity of the mud is taken, and it is also desirable to know the maximum temperature recorded in the hole.

It is well known that infiltration of liquid from drilling fluid into the formation has a marked effect on the behavior of the recorded electrical logs. This may come about, under normal conditions, through the use of poor mud or by allowing good mud to stand in contact with the formation for prolonged periods of time. In either case a knowledge of filter loss is desirable.

It has been shown[2, 3] that considerable change in the electrical-log pattern occurs with a change in electrode configuration. Because of this, accurate and complete information regarding number and spacing of electrodes is essential for an intelligent interpretation of electrical-log patterns.

In order to encompass the previous items and to make the heading more usable, a number of changes and additions have been made from present forms used by the various logging companies. It is recommended further that, instead of using a different form for individual well runs, the one standard composite form be used in all cases. The recommended new form provides for space to report data on three separate surveys. If more runs are made, a double heading can be used in tandem. Sample data are shown in this new proposed heading to illustrate the different kinds of information desired. The side name heading on present logs has been eliminated because a canvas of California operators has shown that little use is made of it. This is likewise true of that portion of present headings which provides space for a graphical location of the well—which appears at the upper left-hand corner. In addition to "COMPANY" and

ELECTRICAL LOGGING COMPANY

COMPANY San Joaquin Valley Oil Co.
WELL KERN 4
LOCATION 330 ft N and 330 ft E from the southwest corner of section
SECTION 22 TOWNSHIP 26 S RANGE 20 E
FIELD OR AREA Lost Hills
COUNTY Kern STATE California

Datum this log kelly bushing
Elevation 345.6 ft; distance to surface-casing flange 10.5 ft
Datum driller, if different derrick floor
Elevation 343.0 ft; distance to surface-casing flange 7.9 ft

RUN NUMBER	1	2	3
Date	4-17-43		
Bottom recording, ft	4,491		
Top recording, ft	812		
Footage logged, ft	3,679		
Casing shoe—electrical log, ft	812		
Casing shoe—driller, ft	810		
Total depth—driller, ft	4,500		
Mud			
Kind	Mohave P-34		
Treatment	Pyro, Quebracho, and Baroid		
Weight, lb per cu ft	84		
Resistivity, ohms per square meter per meter	1.5 at 72 deg F	at deg F	at deg F
Filter loss, ml per 30 min	9.5		
Hole size, in.	15½ to 1,800 ft	to ft	to ft
in.	10¾ to 4,500 ft	to ft	to ft
Maximum recorded temperature, deg F	140		
Electrode spacing			
Shallow penetration	20 in.		
Lateral penetration	11 ft 24 in.		
Long lateral penetration	19 ft 24 in.		
Recorded by	John Smith		
Witnessed by	John Doe		

REMARKS OR OTHER DATA

Self-potential curve affected by stray currents

Resistivity curve affected by fish in hole 3,850 ft to 4,000 ft

Filter loss 30 ml per 30 min while drilling 2,500 ft to 2,800 ft

SELF-POTENTIAL ←millivolts→	DEPTHS	CORE RECORD	RESISTIVITY ←ohms per square meter per meter→

"WELL" two spaces have been provided for the location coordinates, followed by a space to report section, township, and range. It is recommended that well name and number be typed with capital letters for clarity on reduced-size logs. The word "FIELD" has been enlarged to "FIELD OR AREA" to provide a better guide for locating wildcat wells. We believe these additions to be especially important in our California operations.

The elevation and datum information on present headings does not seem to be adequate. Therefore, we have made a substitution in our new form. Elevation of derrick floor, kelly bushing, or rotary table is often uncertain in subsequent years when everything has been removed from the surface location except the well-control equipment. Because of this we have located our datum with respect to the surface-casing flange or equivalent, which is a more permanent installation. Space for the datum, such as kelly bushing, is designated, with its elevation above sea level. In addition, a space also is provided for the distance from the datum to the surface-casing flange. Provision is also made for this same information with respect to the driller's datum, if different. In this way correlation work should never be uncertain.

"RUN NUMBER" and "date" are self-explanatory. "Bottom recording," "top recording," and "footage logged" have been substituted for present wordings involving these data, in the interest of clarity. "Casing shoe—electric log," and "casing shoe—drillers" are self-explanatory, as is "total depth—driller."

Considerable change is recommended on data pertaining to mud properties. Our present knowledge of electrical logging indicates that, without rather complete data on the properties of the mud, serious errors in interpretation might result. Consequently a caption for mud treatment has been added in addition to mud kind, because such data are pertinent to log behavior. Under "kind" should be reported such data as oil base; e.g., "Mohave P-34," or other information describing the specific type of mud. Under "treatment" data should be reported as to materials added to the mud, such as tetrasodium pyrophosphate (pyro), quebrachto, bentonite, etc. Under "resistivity" it is recommended that a sample be taken from the flow stream during circulation just prior to logging; and, that if such procedure was not followed, notation be made in the remarks column as to when the sampling occurred. Considerable evidence has been gained to indicate that samples not representative of mud in the hole frequently are obtained when collected after circulation has stopped. Data on filter loss of mud as obtained by the standard API method have been added. We believe this to be an important item, especially if filter loss is abnormally high, because under such conditions behavior of both the self-potential and resistivity curves would be altered as compared to conditions of low water loss. Water-loss history requiring more space than that provided should be reported under the remarks column, particularly if a different type of mud was used prior to the time of logging.

Space is provided for two different hole sizes, and embraces no essen-

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tial change from present forms. A space on our recommended log is provided for "maximum recorded temperature." We believe this to be a better notation than "bottom temperature" as currently reported.

The question of the form of reporting electrode spacing was one that was discussed in considerable detail. We have shown three resistivity-curve headings, and have a space provided for a fourth. The first has been designated as "shallow penetration." The distance from center to center of the electrodes, in inches, would be noted; and, if a single electrode is used, the word "point" could be recorded. A standard procedure of reporting electrode spacing from top to bottom is recommended. The second resistivity curve has been designated as the "lateral-penetration" curve. Electrode spacing for this curve under normal conditions would be reported as the distance between the current electrode and the first measuring electrode, followed by the distance between the two measuring electrodes. This deviates from present practice, but it is believed such procedure will eliminate any subsequent doubt as to actual electrode spacing. The third resistivity curve has been called the "long lateral-penetration curve." Electrode spacing would be reported the same way as in the case of the lateral-penetration curve. An extra space has been provided for any other electrode spacing that might be used. For example, if a four-electrode spacing pattern were used, it could be reported on this blank line. In such a case the method for reporting might be as follows: The distance from the top current electrode to the top measuring electrode would be followed by the distance between the measuring electrodes which, in turn, would be followed by the distance from the lower measuring electrode to the lower current electrode. It is recommended that present practice for designating the various resistivity curves be continued, and these are graphically shown under each curve heading.

The headings "recorded by" and "witnessed by" are self-explanatory, and do not vary from present reporting.

The "remarks" column can be used to report any unusual condition not covered in the log heading proper, and to amplify any particular item where space is not sufficient. Its use is recommended.

It is suggested further that the so-called "hour-glass" type of log be made a standard form, with depth measurements recorded between the self-potential curve at the left and the various resistivity curves at the right—both types of curves measuring from the center outward. Other ways of presenting the self-potential and resistivity curves as to order and direction have been used locally, but are confusing to most of our committee members and others consulted on this problem. Therefore, we recommend the "hour-glass" type for all areas, even though previous runs have been made with a different order of reporting. Correlations and other studies within any field or area could be made merely by adjusting the old logs to fit the new runs. A narrow space to the right of the depth column has been provided for graphical recording of the core record.

A standardized electrical-log heading as above outlined would meet all requirements of this committee and advisors in electrical-log interpretation. We have weighed carefully the feasibility of reporting numerous other items, but have tried to limit reported data to those necessary in the engineering interpretation of a log as a part of the permanent well record. Although such other data as mud viscosity mud-cake thickness, tension in line, truck mileage, total rig time, etc., should be obtained by the logging companies for future reference, they were not considered as having any bearing on the anomalies of the recorded curves; for that reason they were not included. It should be emphasized that the data included in this recommended heading are all necessary for a proper and intelligent engineering interpretation of any electrical log.

The California District Subcommittee on Core Analysis and Electrical Logging would like to see this recommendation acted upon and carried to a conclusion and solicits criticism or changes.

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[1]John E. Sherborne and William M. Newton, "Factors Influencing Resistivity of Drilling Fluids." *Trans. Am. Inst. Mining Met. Engrs. (Petroleum Development and Technology)* 146, 204 (1942).

[2]Richard H. Zinszer, "The Use of Electrode Spacing in Well Logging." *Trans. Am. Inst. Mining Met. Engrs. (Petroleum Development and Technology)* 151, 164 (1943).

[3]J. C. Sticks, Jr., et al., "Shallow Penetration Curve—Tomorrow's Tools Today," published by Lane Wells Co., 8 (2) (1942).

Reports from Washington

(Continued from Page 4)

"Redistribution Section, Construction Division, PAW, Washington."

The California delegation in the House took an active part in getting the necessary signatures to the discharge petition which will permit the House vote on the Disney price increase bill. Rep. A. J. Elliott was a member of the steering committee set-up to solicit signatures, and he was able to get sixteen of the twenty-three California members to sign.

In addition to Elliott, those from California who signed the petition were Representatives Norris Poulson, B. W. Gearhart, John Phillips, John H. Tolan, John Z. Anderson, Ward Johnson, Chet Holifield, George E. Outland, Richard J. Welch, Carl Hinshaw, Harry R. Sheppard, Cecil R. King, Albert F. Carter, Clarence F. Lea, and J Leroy Johnson.

Buy Bonds

Bituminous Sands and Shales and Partly Depleted Subsurface Sands as Sources of Additional Oil in California

By G. B. Shea

Petroleum Engineer, Bureau of Mines, Petroleum and Natural Gas Division, San Francisco, Calif.

Introduction

Discoveries of crude oil are declining and existing reserves being rapidly depleted; in spite of this, the California petroleum industry today faces the problem of greatly increasing crude-oil output to supply not only essential industrial and civilian needs for petroleum products but to furnish ever-increasing quantities of fuels and lubricants to the fighting forces in the Pacific without wasteful extraction from remaining reserves. Nearing the end of the second year of the war, the petroleum industry in California already is taxed to capacity to satisfy the expanded war demand, particularly fuel oil, despite the fact that 2500 more wells —mostly producers of low-gravity oil— are on production today than two years ago. With further expansion in the war demand impending and, with the desirability of assuring adequate future peacetime supplies of petroleum and its products, interest has been aroused in the possibilities of (1) utilizing the surface deposits of bituminous sands and shales and oil-bearing outcrops in California for obtaining new sources of supply, and (2) obtaining additional oil from the "heavy-oil" fields in which large volumes of residual oil remain.

Accordingly, cooperating informally with the Geological Survey, United States Department of the Interior, and the Petroleum Administration for War, the Bureau of Mines recently initiated a research project in California embracing a study of the extent of residual oils in surface deposits of bituminous sands and shales; methods that might be used for extracting oil from these deposits; and the application of recovery methods to the extraction of residual oil from subsurface sands in the shallow, partly depleted fields of California and unexploited sub-surface tar sand deposits.

Technically and economically the recovery of hydrocarbons from bituminous sands and shales and the extraction of additional oil from heavy-oil fields are beset with problems having many ramifications. The recovery of oil from bituminous sands and shales is by no means new in California; at various times in the past, companies and individuals have been interested in the development of processes for recovering oil from such sands and shales, and old records show that some oil has been produced by such means.

This paper summarizes pertinent facts relative to the recovery of hydrocarbons from bituminous sands and shales and to increasing the recovery of low-API-gravity residual oils from subsurface sands.

Occurrence of Bituminous Sands and Shales in California

Deposits of asphalt and bituminous sands and shales in California occur principally in the immediate region of the Coast Range on both the east and west slopes and at several points within the range, notably at Pt. Arena in Mendocino County, about 110 miles north of San Francisco; near Santa Cruz in Santa Cruz County; in the Edna area in San Luis Obispo County about 6 miles south of the city of San Luis Obispo in the vicinity of Santa Maria, Casmalia and Sisquoc in Santa Barbara County; and in the Ojai and Santa Clara Valleys in Ventura County.[3] In addition, the oil-bearing sand outcrops near McKittrick and Maricopa in western Kern County are important sources of possible recoverable oil.[4] Among the several prominent deposits of these source materials those occurring near Santa Cruz, San Luis Obispo, Santa Maria, Casmalia, and Sisquoc are the largest.

The bituminous sandstones of the Santa Cruz district occur in the Santa Cruz Mountains about 5 miles northwest of Santa Cruz. The zone of enrichment varies in thickness from 6 to 50 feet and embraces an area of 5 to 6 square miles overlain by a thick cap of Monterey shale. The sandstone has been quarried extensively in the past for paving in San Francisco and elsewhere. According to the literature, the bitumen content of samples taken from several quarries averages about 14 to 16 per cent by weight.

In the San Luis Obispo region the Santa Margarita formation comprises the terrane over an area of nearly 50 square miles and an estimated half of its outcrop has been varyingly enriched with bitumen which originated in the underlying Monterey shale. At various times in the past the outcroping sands have been mined for asphaltum, and many quarries, long abandoned, are distributed around the periphery of the Santa Margarita terrane. One of the largest zones of enrichment lies about 6 miles south of San Luis Obispo, adjacent to the Arroyo Grande (Edna) oil field proper, which is on either side of Pismo Creek. The formation forms prominent cliffs on both sides of a narrow valley and extends several miles in a broad belt running nearly east and west. The deposit has been mined extensively years ago for road surfacing material and asphaltum. Early tests show that the sands yield about one-half barrel of oil per ton. One writer points out that "the quantity of contained oil in these permeable sands is enormous—almost unbelievable."[5]

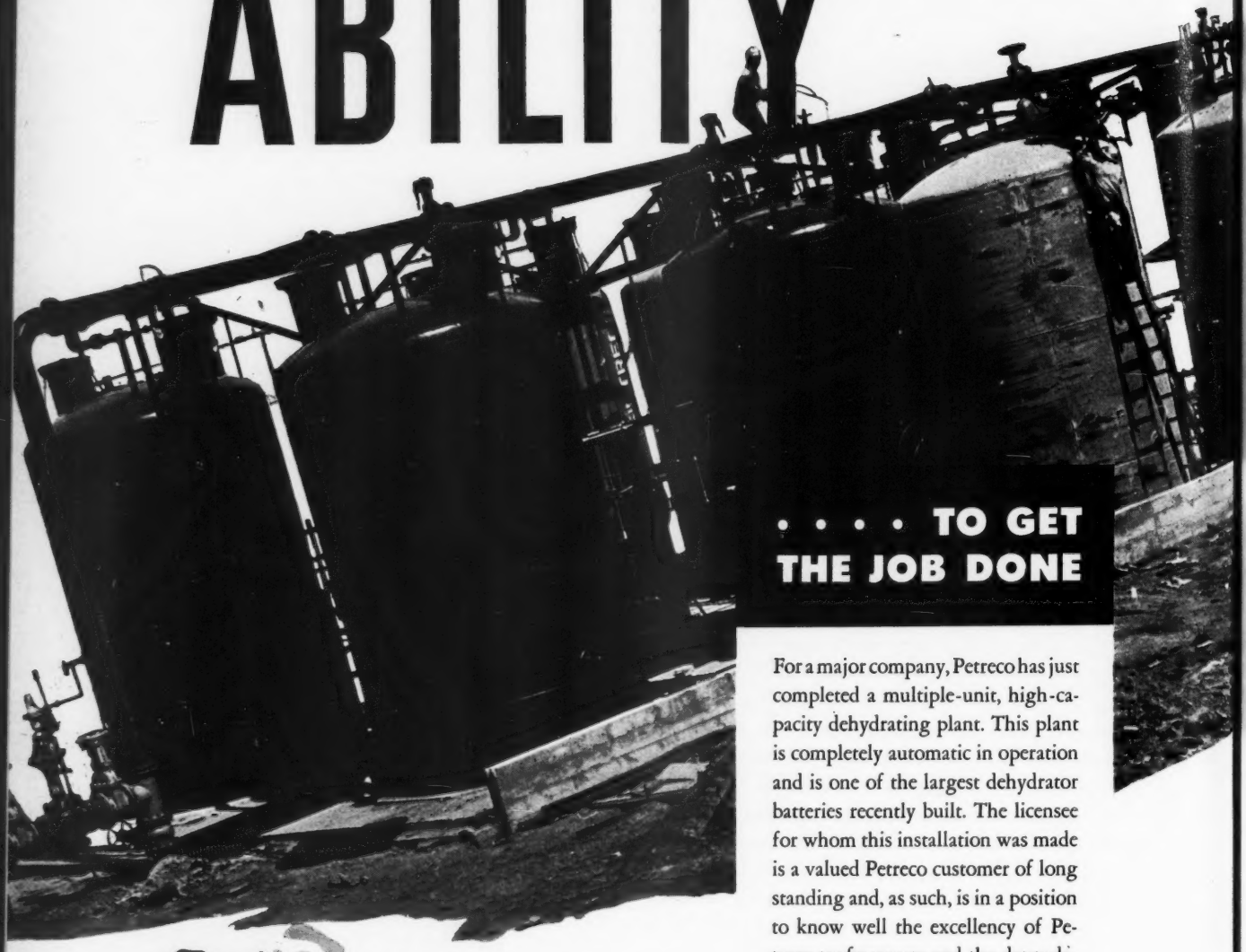
In the Sisquoc district the Santa Margarita formation—exposed along the southern base of the San Rafael Range—is a highly enriched sandstone covering an area of approximately 6 square miles and averaging 200 feet in thickness. The deposit has been estimated to comprise over 50,000,000 cubic yards of bituminous sands. It is reported that surface samples taken at random showed bitumen contents equivalent to 15 to 20 gallons of oil per ton.

In the Casmalia area the formations of oil-impregnated shales and silts occur in massive formations of varying thickness and containing up to 20 gallons of oil to the ton. In the region of the La Graciosa and Aqufre Hills bordering the valley of the Santa Maria River 6 to 10 miles south of Santa Maria, where considerable quantities of asphalt were mined in the early days, the loosely consolidated sands overlying the Monterey shale have been filled with asphalt carrying 30 to 60 per cent clastic material.

Large deposits of bituminous sands outcrop in western Kern County near Maricopa and McKittrick. The Kern River formation also outcrops along the Kern River east of the old Kern River field. The outcrops near McKittrick are easily accessible, can be cheaply worked by surface excacating machinery, are close to existing pipe lines, and contain oil that is especially desirable at this time.

The occurrence of these bituminous

ABILITY



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DEHYDRATING **DESALTING**

sands and shales and other deposits in California has been known for a long time and recognized as potential sources of hydrocarbons. Much is known of their areal geology; but very little definite information is available regarding the minable tonnage and oil content of the deposits. Therefore, careful and systematic geological work, prospecting, and sampling are necessary to determine their value as potential sources of crude oil. The initial coordinated efforts of the Geological Survey and the Bureau of Mines, in collaboration with the Petroleum Administration for War, contemplate field and laboratory studies immediately dealing with several of the more important deposits to appraise their extent and oil content. The oil-saturated sand outcrops near McKittrick have been selected by the Geological Survey as a starting point for reasons previously enumerated, and a field crew now is mapping the area in which they occur. Sampling of the sands and laboratory work on methods for extracting oil from them by the Bureau have been in progress for several months.

Oil-Extraction Processes

Processes for recovering hydrocarbons from bituminous sands and shales may be grouped into three general classes.

1. Separation by the action of hot water with or without the addition of reagents.
2. Separation by the action of solvents, such as petroleum distillates.
3. Separation by heat distillation.

The hot-water method of extracting oil from bituminous sands is preferable to the solvent or heat-distillation method in many practical and economic respects. Nevertheless, successful extraction of oil from sands by hot water depends on the amendability of the sands to the water-separation treatment. Laboratory tests show that all oil-impregnated sands do not exhibit the same susceptibility to water separation. Where the oil cannot be washed from sands by water alone the addition of a small quantity of sodium silicate or other alkaline reagent often has been found to aid in extracting the oil.

Oil can be separated readily from bituminous sand by the use of such solvents as petroleum distillates, and a number of such processes have been proposed. Successful commercial adaptability depends, however, on the first cost of the solvent and its availability under present conditions, loss of solvent, and cost of recovery of solvent from sand tailings and from the dissolved bitumen.

In the heat-distillation method of separating oil from bituminous sands heat required to raise the temperature of a given quantity of material (consisting of approximately 85 per cent sand and 15 per cent oil) and the incomplete recoveries of oil obtained preclude economic separation. The wastefulness of raising the temperature of about 2300 pounds of sand to obtain less than a barrel of oil needs no further emphasis.

Early Attempts to Separate Oil From Bituminous Sands and Shales

During the period 1891-1913 a number of attempts were made in the United States to separate oil from bituminous sands on a commercial scale, chiefly by the use of hot water and solvents. Plants built in California, Oklahoma, and Texas operated for short periods and then were abandoned for one reason or another. Probably the two most ambitious attempts to recover oil from bituminous sands during that period resulted in the construction by the Alcatraz Asphalt Co. of plants at Carpinteria and Sisquoc, both in Santa Barbara County, Calif. The plant at Carpinteria utilized the hot-water method of separation and was operated from 1891 to 1899—considerably longer than any other plant in the United States treating similar material. After suspending operations at Carpinteria the company constructed a large solvent-separation plant at Sisquoc involving a reported financial outlay of $1,000,000. In 1901 the Asphalt Company of America obtained control of the Alcatraz Company, and the plant was abandoned and the equipment dismantled.

For the next two decades incentive for further study and development of practical methods for separating oil from bituminous sands was removed in large measure by the rapidly increasing production of oil from wells and concomitant developments in refinery practices. In the 1920's, however, the fear of an impending oil shortage in the United States revived interest in methods of treating bituminous sands and shales. Modified hot-water processes were proposed involving the use of reagents and flotation cells. Early in 1923 James M. McClave, Director of the Western Research Laboratories of Denver, Colo., conducted a series of experiments to demonstrate the efficiency of water flotation when applied to the treatment of bituminous sands. This work was the forerunner of the development of a successful process for recovering oil from the Alberta sands in Canada. During the summer of 1923 a pilot plant based on the process designed by McClave and having a capacity of 25 tons of sand per 24 hours was built near San Luis Obispo. The plant consisted essentially of a pug mill, flotation cells, settling-tank, and topping still. Also in 1923 a company known as the California Oil Mining Corporation constructed a commercial plant near San Luis Obispo designed for separating hydrocarbons from bituminous sand by means of hot water in combination with flotation cells. No other information on operations at this plant is available.

After World War I, attention also was focused on the extensive deposits of oil-soaked silts and shales in the vicinity of Casmalia, and several investigators attempted to recover the contained oil by retorting methods. Some oil was recovered in these plants, but the "flood" of low-priced oil in California during the 1920's made it impossible to operate the plants at a profit and they were dismantled.

Developments in Treating Bituminous Sands of Alberta, Canada

In any discussion of the possibilities of commercial extraction of oil from bituminous sands in California reference should be made to developments in treating bituminous sand of the Athabaska region in northern Alberta, Canada. On the basis of estimates, which range from tremendous totals of 100 to 250 billion barrels, the Athabaska deposit contains several times as much oil as the combined proved reserves of the world.

The possibilities of mining and treating the Athabaska sands has engaged the interest of the Canadian government as well as private companies and individuals for many years. Since 1913 the Mines Branch of the Canada Department of Mines has carried on an extensive program of research dealing with the bitumen-sand problem. The study and development of a successful method for commercial recovery of the bitumen from the sand also have received major emphasis in the investigations of the Scientific and Industrial Research Council of Alberta. In addition to appraising the nature and extent of the deposit, Government and private engineers found that the material could be excavated at reasonable cost and the oil separated from the sand on a commercial scale. As a result of the studies of the Mines Branch of the Canadian Government, a mass of data on the problem has been assembled. The published reports by S. C. Ells[6], under whose supervision the research work was conducted, furnish an extremely valuable background of information on the many phases of the problem. The reports by K. A. Clark and others,[7] of the Scientific and Industrial Research Council covering laboratory studies and pilot-plant operations from 1923 and 1926 also are fruitful sources of information. In fact, these Canadian reports com-

prise virtually all of the published scientific literature on the recovery of oil from bituminous sands.

After a number of attempts by private interests to develop an economical method of separating the oil from the Athabaska sands, Abasand Oils, Ltd., was organized in 1930 by Max W. Ball to "utilize the oil sand by further development and use of a separation process on which James M. McClave, hydro-metallurgist and engineer of Denver, had been working since 1921." After about 10 years of experimentation and development work a plant with a daily throughput capacity of 400 tons of sand, with provisions for enlargement, was placed in operation in 1941. The Athabaska sands are amenable to water separation, and among the notable features of the separation process as finally developed and recently described in detail in the literature are the quiet-zone flotation cells and the method of freeing the oil of water and mineral matter.[8] The process involves three steps that may be described briefly as follows:

(1) The disintegrated sand is agitated moderately in warm water; the heat reduces the surface tension of the films of oil enveloping and holding together the individual sand grains; and the abrasion of the grains caused by agitation breaks and frees the films, leaving them as oil particles disseminated through the sand-water pulp.

(2) In the second step the disseminated particles of oil are recovered from the sand-water pulp by flotation. As the oil particles have virtually the same specific gravity as the water they will not float, so air is introduced into the pulp to form bubbles with the oil particles causing them to float to the surface of the water from which the oil froth is skimmed.

(3) The third step involves the removal of considerable quantities of mineral matter and water contained in the froth or "mastic" by the application of a combination of stirring and mixing with naphtha or some heavier petroleum diluent and heating for the purpose of reducing the specific gravity and viscosity of the oil so that the water and mineral matter may settle out leaving a clean diluted oil from which the diluent is recovered in the refinery.

Results of Preliminary Laboratory Separation Tests on California Sands

Recent preliminary tests on fresh bailer samples of sand obtained from a drilling well show that the Kern River sands are amenable to water separation without the addition of reagents. In that and other respects the properties of the oil and the sand are somewhat similar to those of the Athabaska deposit.

Separation tests on samples of oil sand taken from the bottom of an old pile of sand pumped from a well in the North Midway field show that water is ineffective in separating the oil, although virtually complete separation can be obtained when a small quantity of sodium silicate was added to the hot water. Unlike the Kern River sands which are fresh-water deposits the sands of the North Midway field are marine deposits, which may account in part for their difference in susceptibility to water separation. Furthermore, laboratory tests indicate that water washing generally is ineffective when applied to oil sands that have been exposed for some time to the air. It was found also that sands from weathered oil-bearing outcrops in the Kern River field and the Edna area did not liberate their contained hydrocarbons when washed with water and with water containing a small quantity of sodium silicate. However, when the samples first were wetted with benzol and then agitated in warm water containing sodium silicate the sand particles became wetted by the water and the oil-benzol solution was displaced and rose to the top of the solution in the beaker. On the basis of these findings as well as those of other investigators the general statement may be made that the properties of the oil in the sands change appreciably with continued exposure to the atmosphere. Separation can be effected with much greater efficiency and at lower temperatures with fresh samples secured at points several feet from the face of weathered outcrops. In laboratory testing, therefore, it is essential to use unweathered samples if reliable determinations of separation methods, separation temperatures, specific gravity, and viscosity of the extracted oil are to be determined.

Recovering Additional Oil From Subsurface Sands in Shallow Depleted fields and Unexplored Tar Sands

Of equal and probably greater importance as potential sources of supply of oil than the bituminous sands and shales in California are the large volumes of low-gravity viscous oils that remain in partly depleted shallow fields. The total estimated volume of these oils having a viscosity above 50 centipoises at reservoir temperatures amounts to several billion barrels. These oils—retained in the sands by reason of high viscosities and low formation pressures—constitute a large known reserve that could be utilized if the viscosity of the oil in place could be reduced to increase the rate of flow to the well. A study of viscosity-temperature curves of different low-gravity crude oils of California shows that a small increase in temperature has a material effect in reducing the viscosity of the oils particularly in the lower temperature ranges. For example, increasing the temperature of a 13° API oil from 80° to 160° F., decreases the viscosity from about 3,000 to about 140 centipoises—a 21-fold decrease in viscosity for an 80° F. increase in temperature. The results of laboratory experiments made to ascertain the effect of temperature on the rate of drainage of heavy oil (13° API) from packed sand columns showed that the recovery of oil increased about 21 per cent by increasing the temperature from 84° F. to 120° F. and increased 41 per cent as a result of raising the temperature to 195° F.

Undoubtedly the successful application of a sustained heat-drive to the heavy-oil fields in California would have an extremely salutary effect in increasing the recovery of low-gravity residual oil. Furthermore, there are large reserves of oil in so-called tar sands in many California fields that could be recovered if some practical means were found to reduce the viscosity of the oil.

Methods of Applying Heat to Underground Sands

The problem of applying heat to oil reservoirs to increase the recovery of oil is a time-honored subject involving many practical considerations — both physical and economic—that is revived periodically in different oil-producing areas. Records show that at least since 1888 sporadic efforts have been made to raise the temperature of oils in sands about wells, but with the possible exception of the subterranean-fire method recently tried by Russian investigators every method wherein heat has been applied to wells has been distinctly local in effect. The crux of the problem arises from the large quantities of heat required to raise the temperature of the formation itself in order to bring about reduction in the viscosity of the oil.

The injection of steam and hot water has been tried in different fields, and one of the longest tests was conducted in Texas in 1933.[9] Although steam was injected into the oil sand for 185 days and wells offsetting the steam-injection well are reported to have maintained higher production rates than before the injection of steam, the increase of temperature extended a distance of only 15 feet from the injection well.

Different types of electric heaters also have been lowered into wells to heat the

face of the sand and to cause greater flow of oil into wells. Usually, however, the increased recovery resulting from the use of electric heaters (and circulating steam also) has been due to the removal of paraffin and other deposited hydrocarbons on the face of the sand. Heat probably did not enter the oil sand for more than a short distance.

In Russia, Soviet engineers actually created a combustion at the bottom of wells and ignited the oil in the sand.[10] Combustion was maintained by forcing air down the "fire" well. Although the experiments were not conclusive, it is reported that the engineers were able to maintain combustion in the sand and force some oil to a nearby well. A similar method of heating the oil in place by means of a moving fire was tried several years ago in Pennsylvania, but the test was not successful because it was not possible to maintain combustion. The method, however, has some merit, and further experiments along similar lines should be attempted. It probably would be easier to maintain combustion of heavy oils once they are ignited than it was to keep the higher gravity oils of Pennsylvania burning.

So necessary is it to find practical methods for reducing the viscosity of oils **in situ** if low-gravity residual oils are to be recovered that concerted efforts should be made to perfect means for such accomplishment. Even if water flooding of low-gravity oils is to be successful in California, some means must be found to reduce the viscosity of the oil so that it may be driven to wells by water under a pressure which cannot be so great that the overburden will be lifted. Should it prove impossible to reduce the viscosity of oils in shallow sands only one method remains to get out the oil—mining.

Possibilities of Oil Mining in California

That the drainage of partly depleted oil sands through underground mine openings is technically feasible under favorable conditions has been demonstrated both in Europe and the United States. The outstanding examples of the application of mining methods to the recovery of petroleum are the well-known Pechelbronn oil field in northern Alsace, France, and the Hannover and Wietze fields in Germany.[11] Under the conditions prevailing in those fields several times as much oil as was previously produced by primary methods of recovery through wells which had passed their economic limit of production has been produced by modified mining and drainage methods.

It is of more than passing interest that in 1866 the first of a series of 31 oil-drainage tunnels were driven into the oil sand of Sulphur Mountain in Ventura County, from the surrounding canyons at a slight inclination to facilitate drainage of oil to the portals. Although it is questionable whether the tunnels were commercially profitable, at least they indicate the feasibility of applying mining operations to the recovery of oil that cannot be produced through wells.

Of interest also was the effort to produce heavy oil by mining in the vicinity of Newport Beach, Calif. In 1925 a shaft was sunk to a depth of 500 feet at an incline of 45° to a body of oil-impregnated sand. A drift about 30 feet long was driven in oil sand from the bottom of the shaft. By means of a large steam coil in the drift the oil and surrounding sand were heated, and within a short time 500 barrels of 5° to 6° API gravity oil was produced. The rate of production, however, soon declined to 5 barrels of oil a day and the project was abandoned.

The most recent development in the application of mining technique to oil recovery is the Ranney horizontal well-drilling project near Franklin, Pa. In this project a system of drainage is contemplated which involves drilling a series of horizontally radiating boreholes up to 2,000 or more feet long from the bottom of a 430-foot shaft penetrating one of the Venango sands. To date the shaft has been completed, and two horizontal holes have been extended out from the shaft over 1,500 feet in opposite directions.

Some engineers believe that the cost of producing oil by drainage through mine openings will compare favorable with other stimulative methods of recovery, such as air and gas drive and water flooding, that may be applied in shallow fields that have about reached their economic limit of production by primary methods and yet contain vast quantities of oil.

The sinking of shafts and driving of drifts through bodies of oil sand require a special technique not exemplified in the mining of other minerals. However, comparatively safe and effective methods have been developed, and the near future may witness many attempts to gain oil by mining.

Summary Statement

There is reasonable probability that conditions eventually will cause considerable commercial development of some of the bituminous sand and shale deposits in California. The time for applying effective methods for obtaining additional oil from partly depleted fields also seems near at hand. The abnormally heavy demand for petroleum and its products to meet war needs undoubtedly has hastened the day for initiating serious study and development of processes for obtaining hydrocarbons from these sources. Consequently, the time to start thinking and acting to meet conditions that are bound to come is **now** while there is yet time to proceed with some deliberation.

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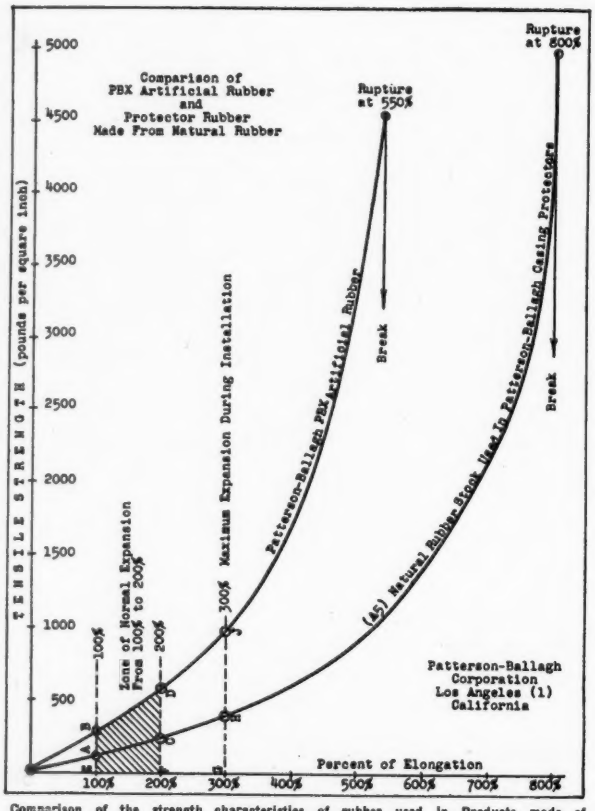

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Why I Have Worked 30 Years for One Company

By Walter J. Held
Standard Oil Co. of Calif.

A small gold badge was recently pinned upon my lapel by my employer; it was for holding a steady job for thirty years. I thought back over those crowded years wherein I had always been well paid, in an environment always pleasant, and with association with people most congenial. I thought of the serenity of my mind, of never once having doubt of the loyalty of this firm to me.

The years have been increasingly difficult ones, but the greater the problems that have confronted this company, the more evident has been its moral strength.

I doubt if there has been an employer that has been beset with more disturbing circumstances, calling for more perseverance, for more faith in itself and its men, and for more ability to progress. Its advancement has been in pace with the rise of a great industry and the advent of other vast related fields of enterprise. The petroleum business has had dramatic and revolutionary changes which have called for outstanding industrial statesmanship. A weaker organization would have failed in face of such drastic transitions in the nature of its services, its products, its markets, and the very way of living of our people.

I have thought often of late that I would like to tell the public, that has not had the privilege of familiarity within this organization, that these years of this company have not been in vain; that it has been men like those managing its business who have contributed importantly to making this country a better place to live in and are today representing the nation's most potential source of industrial strength. It is men of this calibre who give promise for the time to come when industrial leadership will be so desperately depended upon to aid in the rehabilitation of the entire world.

One has heard possibly that a corporation is soulless; that it is a great, smoothly running but entirely impersonal machine. But I can from my own knowledge say that no one man could be any fairer or more faithful to the interests of his family than my employer has been to its people.

Walter J. Held

The number of oil company employees who have worked for one employer for many years is impressively large. The same may be true in other great American industries. It's a rather good indication that the conscientious worker finds satisfaction in his job and a high regard for his employer under this country's system of free enterprise. The author of this article tells what he thinks of his company and of his confidence in the future under our existing business system.

This devotion is not just characteristic of a single president, or a board of directors, or of certain executives—or of any particular time in the thirty years past of which I can speak. The same character in action and policy, straightforward purpose, and consideration have been witnessed from the first day I came here and of the first superior I worked under. There are only two men upon the executive roster today that were in such positions three decades ago; there have been many men who have sat upon the board of directors; there have been five presidents; and I have worked under at least a score of persons—but there has never been the slightest departure evident at any time to the intelligent, broad-minded, honorable standards of conducting this business.

Its principles of doing business are consistent whether it is buying or selling services or goods. It scorns the price cutter, the chiseler, the persons who would usurp another merchant's relations by unfair means. It is just as loyal to its suppliers as to its patrons, or its employees, or its stockholders.

I can think of this immense company only in terms of men, a legion of men, men succeeding men. They who people its organization form to me a never-ending subject of absorbing interest and admiration. Men come in youth, pass into middle life, retire or perhaps die; but there never has been displayed the slightest faltering of purpose, slackening of stride, or relinquishing of ideals. This to an outsider may appear remarkable, but it is a fact supported by thirty years of intimate observation.

For many years I have had the privilege of witnessing the making and execution of policies by countless officials, and I have never once, not in one single instance, seen the slightest evidence of any effort but what was conscientiously considerate of the interests of the public.

I have never heard of the slightest suggestion of unscrupulousness.

There is really nothing surprising about such a consistent standard of conducting a business when you know that this company is like a great university, with men continually advancing under conditions of management that can school them in only one way of doing their work. If it is not done that way, men do not progress, do not get into positions of authority.

The man who is president today was an assistant in a sales agency when I came to work. It had already taken him more than a decade to get that far, and it took him still a quarter of a century to occupy his present office—an entire business lifetime before he became head of this firm. Somewhere in this organization is the man that no doubt will one day also be president; he may be tramping the streets with an order book in his pocket, or working in our petroleum laboratories, or perhaps in some remote spot seeking new fields of crude production, or, likely as not, on a fighting front among those sixty-five hundred former employees now serving their country. Be assured nevertheless he is somewhere working his way to the top—with long years of hard, honest industry between him and the job.

In thirty years much has happened in this world, many a man's faith has been shattered by his fellowman's frailty; there have been businesses and men who have failed in living the way of life we in America have wanted and sought and now fight for. There have been friends and neighbors who have suffered from the failures of their employers.

The past decade with its years of depression was too great a burden to shoulder for many employers. In times of prosperity they may have been generous to their workers, but with dissipating resources, a waning confidence in themselves, their businesses, their country, the easiest way out was taken—wages were drastically cut, forces cruelly reduced. Jobs disappeared over night; markets dwindled away. The burdens of taxation were more than could be borne by many. But here we had officers, management, of not only great courage and strength, but of inherent honesty.

It was firms such as this one, industrial leaders like those men right here in this company, that formed the bulwark that steadied and rallied an economically sick nation.

It has been the payrolls of this corporation that were the mainstay of more than one western community not ten years back. It was the holding together of several thousand more men than actually needed, who had to have jobs made for them, that contributed in keeping our country from disaster. It is still fresh in my memory, a former president's action in telling his managers—when the very ebb of the depression was upon us—that not an employee was to be laid off without his personal knowledge—and not one man was! Jobs were found. A pipeline was built against future need. Hundreds of occupations were created, all genuine; but some firms might have waited to be certain that a better day was to come before taking such action. Sometimes one's memory can be shortlived, one's gratitude not of lasting quality, but these are things we should not forget now.

Ahead of us lies an unpredictable future for this country and for this company and for every man and woman in it. Today holds no immediate hope for a turn toward an easier world to work in, a happier place to live in, or a promise for improvement of the multitude of problems of this corporation and of its ramified, important industry. Our troubles as individuals and as employers are now overshadowed by the predicament of the world and all of its peoples.

There will be troubles, apprehension, perhaps transcending anything of the past. But what imparts confidence to me of the outcome is the knowledge of the physical and moral strength of American industry. Its resourcefulness, its patriotism, and its commercial power will do as much as anything else to convey this nation and its allies to victory.

One speaks of the years of prosperity of two decades ago and many no doubt picture this company riding on the crest of riches. But I know this was a most troublesome era for my employer and its industry. Here were years of feast and famine. First a cry of diminishing oil reserves and resources, a frantic search for new fields. Then an outpouring from new areas; followed by a rush of selfish interests to rob Nature's vital, irreplaceable stores. Derrick upon derrick was reared in countless boom districts. There was a chaotic scene not paralled since the gold rush days or the early Pennsylvania oil strikes. It took cool heads, and fine commercial instincts of such companies as this one to save an industry from ruin. Our people deplored the town lotter, fought the boot-leggers and the price cutters.

The airplane came into its own. It was this company that bought one of the first big commercial planes, flew it from one end of the West to the other. It demonstrated it in hundreds of communities where a transport flyer had never been seen other than in pictures. It took thousands of citizens on their first flights. City officials, legislators, business men, people in all walks of life confessed they had more faith in this company than in the airplane and went up confidently.

My employer nurtured the embryonic airlines. It backed a big metropolitan airport when more money was going out than was coming in. One great carrier system today once owed more money than its total capitalization to this company—and its credit was still good.

This company was big when I was employed by it for it had already been a part of the West for more than a generation. Its president was the same man who collected a few stalwart companions and

sought out California's first commercial production of petroleum in 1876. By 1913 the great, stirring saga of Western oil was ready to be written; the pioneering for petroleum fields, for laying down pipe line systems and for making a good kerosene and other important products of the times had transpired. The men who had struggled for and achieved the things that made this company of some substance now had departments of specialists to execute the responsibilities of a corporation.

I soon discovered, however, that my employer was still pioneering, still leading not only its industry but oftentimes American business with its forward thinking policies and practices in the interests of its workers.

It was back in 1914 that this company started to observe a system which provided after one year's service that a daily wage employee would be transferred to the monthly salary payroll and would enjoy all benefits, the same privileges and conditions of work as all other employees, which included vacations with pay.

It has been observed in many other instances that the petroleum industry—and this company—has been in the vanguard of trends toward improving working conditions and state of happiness of employees. Time and time again throughout the many years of this company's business life, the adoption of various labor laws found that no change in practices was needed here, the company having already put into effect policies either comparable to such enactments or more liberal from the employee's standpoint.

This company led the way for the oil industry in 1917 in adopting the eight-hour day throughout all of its departments. It was the first to establish the six-day week for drilling crews, which formerly remained constantly on a job until completed. In 1918 a pension plan was started; later this became a contributory plan. Gratuitous life insurance has likewise been in effect since 1918, as well as sickness benefits and industrial and non-industrial accident provisions.

In 1919 there was in California a furor among employers generally over the proposed compulsory industrial compensation act, which finally became a law. Prior to its enactment this company had followed voluntarily the principle of industrial compensation to its injured workers, and with its enforcement it not only readily accepted but welcomed this humanitarian legislation.

This company has always been of the belief that any contribution to the good being of its employees pays gratifying returns in appreciation, loyalty, and efficiency.

That my company has profited by its fair, and oftentimes most generous policies and practices with the employees and the public is clearly apparent. On one hand, it has never had labor strife, its operations have never been closed down or its people suffered from strikes; from another interested viewpoint, it has never passed a dividend to stockholders.

An impartial observer can very well conclude: it has paid my employer to be a leader in the behalf of its personnel, to exhibit a high sense of good citizenship in all of the hundreds of communities in which it transacts business, and to be a constructive contributor to the problems of the petroleum industry to the extent of often subordinating its immediate and direct interests for the benefit of all members of this great, important business.

I believe without the slightest question, explanation for the internal strength of this organization that has carried it ahead with such success has been the always present opportunity of every man to succeed for himself and to the extent of his mental and physical resources. Virtually every kind of labor, skill and profession are needed within this big company; some of the finest positions to be found in any firm in this country are in this organization. There is no line drawn; there is no limit to anyone. And the best proof of this are the men holding such jobs. Such a thing as special influence helping a man to get a preferred occupation is nonsense, if you know anything about the men who have gained good positions. It takes hard work and harder head work, however, to succeed here; it takes continual improvement and preparation for better jobs.

I have noticed that the men who have continued to go ahead after reaching some of the highest levels are those who still work for further achievement. One of the hardest working, constantly improving executives I have known here is a man who when manager of an important department, still was its hardest working member, and had time and energy and abundant initiative for other responsibilities. He later became president of one of our largest subsidiary companies, and now is a vice president of the parent company.

Another man when general manager of a widespread affiliated corporation continually traveled all over western United States among more than a thousand service station units and personally spoke and shook hands with every one of a force of more than 3500 salesmen. He is now a vice president and director of the company.

I appreciate these thirty years of security, of countless benefits, of thoughtful treatment, of genuine kindliness, and of outright generosity. I am humble in the knowledge of my employer's strength and substance to ride through the many times of trouble of this country. I am proud of its integrity in its relations with its employees and the public. I confess its inordinate honesty has all through this period of employment been the greatest influence to me to emulate in the conduct of my own life. And, finally, I am proud of the reflected respect accorded me by people generally because I am an employee of this company.

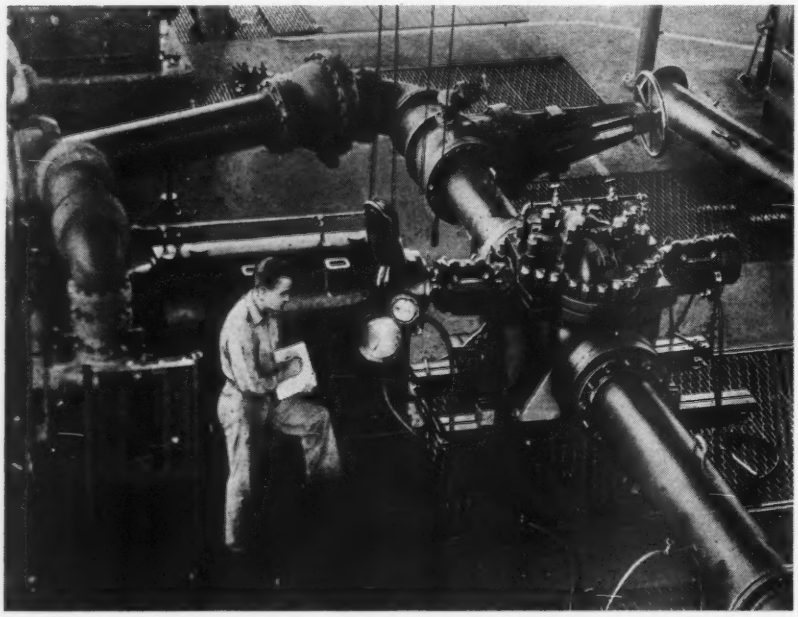
Ingersoll-Rand Pumps On 20" War Emergency Products Line

Ingersoll-Rand Company is supplying 41 pumps for the War Emergency Pipe-Line project known as the 20" Products Line. This line will parallel the 24" line, popularly known as the "Big Inch." The Products Line will carry finished refinery products, such as gasoline and fuel oil, whereas the "Big Inch" will normally carry crude oil.

The pumps, which were especially designed for this particular job, are single-stage, centrifugal units. Since it was specified that no critical materials should be embodied in the pumps, all major castings are of high grade cast iron.

Each pump is driven by a 3570-rpm, 1500-hp electric motor and operates against a total head of 825 ft. Three such machines in each pumping station will operate in series to produce a final line pressure of 800 lb. per sq. in. This pressure is gradually reduced by friction between stations until the suction pressure at the succeeding station is about 30 lb. per sq. in. The first pump in the series of three builds this pressure up to 287 lbs. per sq. in.; the second one to 544 lbs. per sq. in.; and the third one to the final pressure of 800 lbs. per sq. in. Capacity of the line will be 235,000 barrels per day, which is 6855 gpm.

The pumps are so designed that two may operate in series or one may operate alone if such an arrangement is desired. With two pumps operating in series, the line will deliver about 83 per cent of its rated capacity, and with one pump alone about 55 per cent of rated capacity.



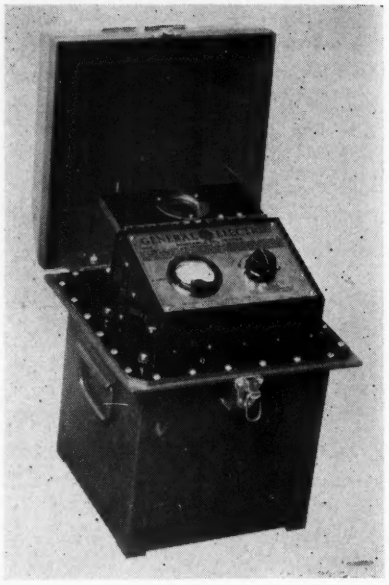
"Little-Inch" Pipeline pump on a test bed at the manufacturers works.

30,000-Volt Portable Oil Tester

An improvel 30,000-volt portable test set for the convenient and rapid testing of insulating liquids such as oil and Pyranol has been announced by the General Electric Company. The set, designed for indoor sertest voltage from 0 to 30,000 volts on single-phase, 115- or 230-volt, 25- or 60-cycle circuits.

This portable tester can be used to advantage in industrial plants, central stations, substations, and whereever frequent oil testing is required, saving both time and expense in checking the proper dielectric strength of insulating liquids.

The tester combines in a single unit a step-up transformer, a potentiometer which gradually raises the test voltage, a voltmeter to measure breakdown values, an automatic circuit breaker, and an oil testing receptacle. The control panel is inclined toward the operator, enabling him to read the voltmeter easily and accurately. As soon as the test sample breaks down, the low-voltage breaker automatically opens the circuit, preventing continuation of the arc and burning of the electrodes. Complete instructions for operation are included on the surface of the control panel. The oil testing receptacle is located at the rear of the control panel under a hinged safety guard with a glass window.



G-E Portable Oil Tester. Top Cover Open.

The equipment, enclosed in an attractively styled steel case, weight 80 lb. A hinged cover protects the control equipment and testing receptable.

J. F. Bechtle Joins Standard Steel

J. F. Bechtel has joined the Standard Steel Corporation, Los Angeles, as Assistant General Manager. He brings to this company wide experience gained through a 20-year association with the M. W. Kellogg Company in New York City. He was connected with the Metallurgical and Research Department and was intimately associated with the development of welding and Pluramelt. He attended Columbia University studying mechanical engineering.

In 1891 the first reindeer were imported to Alaska from their native habitat, Siberia. Now the Alaskan Indians and Eskimos consume more than 35,000 reindeer annually for food and clothing.

THIS LAUGH

OFF!!

Way down in Georgia a traveling man found himself stranded for the night and in his rambles around town noticed there were two churches of one denomination. He asked a colored man why there should be two churches.

"Well, boss," said the informant, "Dey jus can't agree. One of de churches believes dat Pharaoh's daughtah found Moses in de bullrushes. De oda church claims dat's what she sez".

A man walked into Robert Ripley's office, took off his hat, and four tulips were growing out of his head. He bowed to the receptionist, and the tulips waved in the wind. "I want to see Robert Ripley," he said.

Receptionist: "And what do you want to see him about?"

Two girls were looking at the new paintings on display in the gallery. Suddenly they came before a nude which one girl recognized at once as a painting of her companion.

"Why, dear, I didn't know you ever posed in the nude," said she in a tone of astonishment.

"I certainly do not," was the highly indignant reply. "He painted it from memory."

Everyone is of some use, even if nothing more than to serve as a horrible example.

A customer in a Taft cafe reading headline in newspaper about a threatened tragedy asked the waitress: "How would you like to be buried in a snowdrift for 18 hours with your sweetie?"

She replied: "Say, if me and my sweetie was buried in a snowdrift, we'd be swimming in twenty minutes."

A sweet young thing from the window: "Say, iceman, do you have the time?"

"Sure, but who's going to hold the horses?"

First Lunatic: "What have I got here in my hands?"

Second Lunatic: "Three bombers."

First Lunatic: (Looking carefully into his cupped hands) "Nope."

Second Lunatic. "The Empire State Building?"

First Lunatic "Nope."

Second Lunatic: "The Philadelphia Symphony Orchestra?"

First Lunatic: (slyly) "Who's conducting?"

Doctor: "I can't find any cause for your complaint. I think it's due to drinking."

Patient: "Okay, I'll come back some time when you're sober."

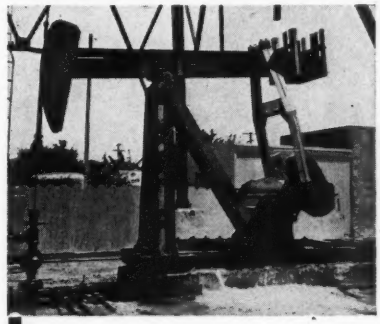
Blackie: Is my face dirty or is it my imagination?"

Brownie:: Your face isn't dirty; but I don't know about your imagination."

To his negro company of infantry in camp, a colored first sergeant spoke dire words. "From now on when I blows dis whistle, ah wants to see a huge impenetrable cloud of dust come bilin' outadem tents. An when 'at dust clears away, ah wants to find three rows of statutes."

A Hollywood producer received a story entitled "The Optimist." He called his staff together and said, "Gentlmen, this title must be changed to something more simple. We're intelligent and know what an optimist is, but how many of them morons are going to know it's an eye doctor?"

The stingest man we ever heard of bought his bride a nickel's worth of peppermint lozenges and took her on a trolley-ride honeymoon. When they got off the car he said, "Honey, suppose we save the rest of this candy for the children."



You Need This Bulletin

Our Bulletin No. 27 should start you thinking along lines that can save you a lot of money. Any well is more satisfactory, more dependable and more profitable when pumped with the right JENSEN Unit, as many California producers already know.

So—won't you ask for Bulletin No. 27 or consult our section in the new Composite Catalog.

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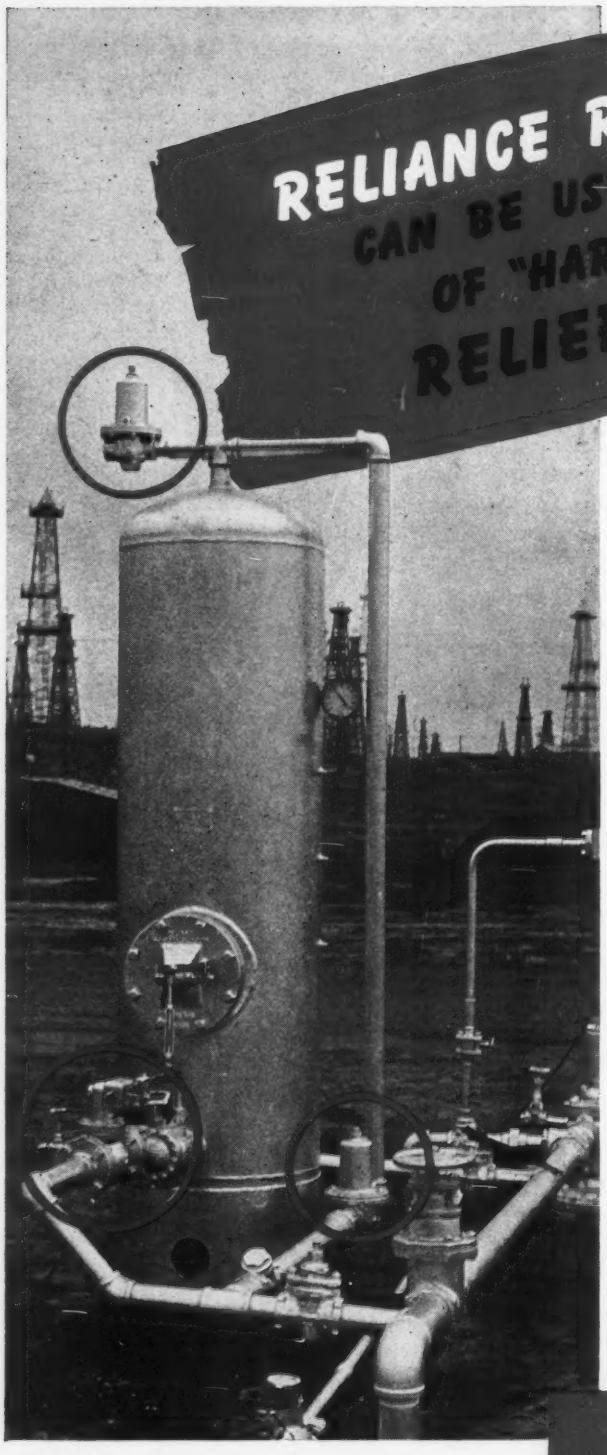

RELIANCE REGULATORS CAN BE USED IN PLACE OF "HARD-TO-GET" RELIEF VALVES

100% EFFICIENCY IN ALL APPLICATIONS

Now, with generally accepted relief valves hard to get because of priorities, backlogs and transportation difficulties, industry is learning the value of adapting Reliance Regulators and Relief Valves to their many pressure relief problems. A wide range of Reliance units of various sizes, capacities and applications are available for by-pass, back pressure, differential, limiting and other types of regulatory services. Three of the many types available are described below.

RELIEF AND BACK PRESSURE VALVES

... are recommended for service where relieving variable quantities at normal moderate temperatures is required.

These valves are used extensively in safeguarding various types of apparatus installed on high pressure lines and are made in ¾" to 10" standard pipe sizes.

DIFFERENTIAL VALVES

... are recommended for use in refinery, gasoline plants and oil line installations. They are used extensively for protection of meters, pumps, etc.; and to safeguard them in case they fail. They can also be used on butane meter installations to eliminate vapor lock in the meters.

These valves are made in ¾" to 2" standard screwed pipe sizes and 2" series 15 or 30 flanged.

PRESSURE LIMITING VALVE

This valve limits the pressure in a line by shutting off at any set pressure and locking the pressure upstream. A breakable disc is incorporated in the design and when this breaks the valve closes tight and remains closed until a new disc is installed. These discs are made for various pressures from 15 to 150 pounds shut-off. The pipe sizes of the valve are ¾" and 1"

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Field Development

Los Angeles Basin

Getty to Drill In Athens Area

J. Paul Getty has staked location for Westmore No. 1 some 1390 ft. north and 1430 ft. west from the intersection of Imperial Blvd. and Western Ave. This location falls northwest of the old El Rey well which has been producing a small amount of oil for several years. The try is in section 2-3s-14w about 2 miles west of the north end of the Athens-Rosecrans field.

Pomona Cat In Basalt

Macmillan Petroleum Corp. Walnut Creek No. 1, located west of the town of Pomona in section 22-1s-9w, is drilling ahead in Basalt below 1700 ft. Top of the Basalt was encountered at 1670 ft. No showings have been found to date.

Puente Test Looks Wet

Southeast of the town of Puente, Horace Steele Kenwood No. 1, is pumping water with a scum of oil from the plugged depth of 4060 ft. Located in section 17-2s-10w, well was drilled to a total depth of 4275 ft. Approximately 1500 ft. southeast from this well operator has location staked for Kenwood No. 2.

Del Valle Completion

R. E. Havenstrite Barnes No. 3, located in section 16-4n-17w, was completed from the Videgain zone on November 25, 1943. Total depth is 5526 ft. with seven inch casing shut off at 5473 ft. A 5½ inch perforated liner was landed at 5526 ft. Initial production was gauged at 726 barrels per day of 34 gravity clean oil, flowing through a 24/64 inch bean. Present production is 175 barrels per day flowing through a 10/64 inch bean. Bankline Oil Co. Orduno No. 103, northwesterly outpost to the Del Valle field, is currently drilling ahead in tough shale, at 2100 ft. This well is located in section 18-4n-17w.

Beloil Drills at Huntington Beach

Beloil Corp. is preparing to redrill and test the Jones sand in Scouller No. 1 northwest of the intersection of 18 St. and Walnut Ave. Hole was originally completed from the main zone at 4395 ft. by the Superior Oil Co. The present program calls for drilling a straight hole into the Jones sand to approximately 2800 ft. Across 18 St., east of this well, Wilshire Oil Co. has recompleted H. B. No. 9-A for an initial rate of 800 barrels per day. The hole was redrilled and recompleted from the Jones sand in the offshore pool. Total redrilled depth is 3511 ft. with zone open between the depths of 3172 ft. and 3511 ft. In this same area The Termo Co. is preparing to redrill the Jones sand in Fee No. 5.

Inglewood Deep Test Continues

Standard Oil Co. Baldwin-Cienega No. 105, deep test well in the Inglewood field, continues drilling and taking spot cores below 9900 ft. The operator has released no information on the formations penetrated below the Sentous zone.

Deep Test Continues

The Texas Co. Field No. D-1, deep test well in the Long Beach field is drilling ahead in hard shale below 10,200 ft. No cores have been taken to date, however a constant check is being made by frequent runs of the electric log. The well is located northwest from the intersection of Spring and California Streets.

LOS ANGELES BASIN WILDCATS

Area	Well	No.	Section	Depth	Status
Athens	J. Paul Getty, Westmore	1	2, 3-14		Location
Aliso Canyon	Barnsdall-Bandini Pet. Co., Roosa	1	29, 3-16		Rig
	Standard Oil Co., Frew	1-2	29, 3-16	5501	Drilling
	Standard Oil Co., Del-Aliso	1	29, 3-16		Grade
Calabasas	Br.-Am. Oil Prod. Co., Coleman	1	25, 1-18	1725	Abandoned
Del Valle	Standard Oil Co., N.L. & F.	3-1	19, 4-17	6425	Drilling
Norwalk	Gen. Pet. Corp., H. B. Allen	1	12, 3-21	9796	Drilling
Pomona	Macmillan Pet.Corp.,Walnut-Creek	1	22, 1-9	1705	Drilling
Puente	Horace Steele, Opr., Kenwood	1	17, 2-10	4275	Pumping
	Horace Steele, Opr., Kenwood	2	21, 2-10		Location
	J. C. Drilling Co., Kelso	1	12, 2-10	3442	Idle
Rice Canyon	General Pet. Corp., Mendota	1	22, 3-16	6834	Abandoned
Sylmar	Richfield Oil Corp., T.I.T.	1	19, 3-15	3729	Drilling
Towsley Canyon	Haws & Ellsworth, H.E.	1	8, 3-16		Location
Whittier	C.C.M.O. Co., E.Whittier Comm.	1-1	34, 2-11		Rigging up
	Orange County				
Costa Mesa	Lovelady & Frambes, Destiny	1	9, 6-10	1550	Idle
East Coyote	Barnsdall O.Co.,Sunny Hills Ranch	1	22, 3-10		Rigging up
Newport Beach	Signal Oil & Gas Co., Banning	2	20, 6-10	3779	Pumping

Redondo Outpost Still Testing

Dumm Brothers Pet. Corp. Redondo No. 1, northerly outpost in the Torrance-Redondo area is preparing to make another pumping test. Total depth is 3925 ft. with a combination string of seven inch casing landed on bottom. To date the operator has been unable to shut off the water between the two zones open in the well.

Yorba Linda Well Plugged

Shell Oil Co. Olinda Fee Four No. 58-15, easterly outpost to the Yorba Linda field, has been plugged back to 1480 ft. Located in section 15-3s-9w hole was bottomed in gray conglomerate at 2520 ft. The hole has now been plugged back and operator is making prepartions to test some heavy oil showings found above 1475 ft.

Richfield Try Is Abandoned

Kohlbush and Lyons Thurston No. 1 section 27-3s-9w, northeasterly outpost well to the Richfield field, was abandoned after redrilling to 3779 ft. and finding only gray sand in the objective zone. Southwest of this well, in section 34-3s-9w, the Standard Oil Co. is redrilling Anaheim Union No. 2-2 to improve its structural position. The hole was originally bottomed in gray sand at 3235 ft.

Deep Test Pumps Water

Standard Oil Co. Murphy-Whittier No. 62, deep test well in the old Whittier field, is pumping water at a 300 barrel per day rate. Located in section 26-2s-11w hole was cored to a total depth of 8033 ft. No showings worthy of a test were found below the old producing horizons in the field. Hole was plugged to 2710 ft. and operator is attempting to complete the well from sands found between 1300 ft. and 2710 ft.

FOR SALE

Local holding company owning landowners and overriding royalty in 13 oil wells Signal Hill and Huntington Beach; income $700 or more per month; other assets consisting of misc. drilling mach., 5 steel derricks, drilling site lots, and 64 ac. potential oil land San Luis Obispo Co. Contact L. D. Uhlman, Tele. 652-14, Long Beach. 12/20d

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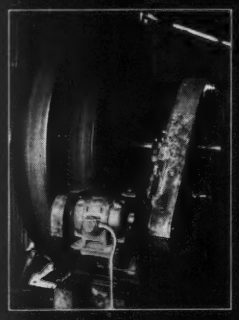
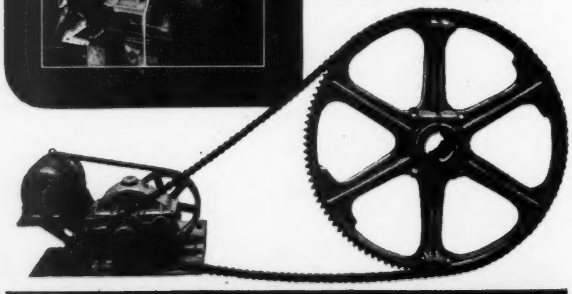


Smooth as the oil it pumps, this Gear Unit replaces old style standard prime mover and drive, retaining same walking beam, counter balance capacity and stroke. Built for slow speed, maximum capacity, highest efficiency with minimum horsepower.



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Coastal and Northern Districts

Shell Extends Ventura Avenue

Shell Oil Co. Taylor No. 167, southerly outpost well, was completed December First for an initial rate of 1000 barrels per day of 28 gravity clean oil. Total depth is 8861 ft., plugged to 8760 ft. Seven inch casing was cemented at 7177 ft. and a 5 inch perforated liner landed at 8757 ft. The completion of this well extends the known producing limits of the Ventura Avenue field approximately 1000 ft. to the south.

Continental to Drill In Santa Maria Valley

Continental Oil Co. is grading roads to its location for Davis No. 1 some 330 ft. north and 990 feet east of the southwest corner of section 28-10n-33w. This site is southeast of the producing limits of the Santa Maria Valley field. Present plans call for drilling to the basement complex if necessary. Still farther to the southeast in section 6-9n-32w, J. I. Anderson Elliott No. 1, is drilling ahead in brown shale, showing steep dips at 1790 ft. Well is believed to be below the Chert zone at this depth.

Orcutt Field Gets Deep Test

Union Oil Co. is preparing to deepen Pinal No. 1. Located in section 24-9n-34w hole was originally drilled in 1902 to a total depth of 2903 ft. and has not produced for several years. The Union organization is also currently engaged in drilling a deep test in the Santa Maria Valley field. The try, Bradley No. 1-7, in section 25-10n-34w, is drilling ahead in brown shale below 6200 feet.

General Pet. Drills at Rincon

General Petroleum Corp. has completed the extension of its pier and is preparing to spud Ferguson No. 6. Location reported is 1670 ft. southwesterly along the northwesterly line of the Ferguson lease from the most northerly corner, thence 126 ft. southeasterly. Location is in projected section 7-3n-24w. Well will be completed from the Miley zone.

Chico Cat Deepening

Richfield Oil Corp. Chico No. 1, located in section 17-21n-1e, is spot coring ahead in sandy shale and gray sand below 6800 ft. The operator present plans calls for drilling into the cretaceous before plugging back and placing well on production from the gas sand found at 4270 ft. A formation test run on this zone from 4272 ft. to 4385 ft., indicated a production in excess of 13,000 m.c.f. per day of dry gas.

Colusa County Test Shows Gas

General Petroleum Corp. Capital No. 1 drilled and cored to a total depth of 3460 ft. in shale and gray sand. The hole was plugged back to 2940 ft. and a formation test made of the interval from 2919 ft. to 2940 ft. Well blew dry gas at a rate in excess of 7,000 m.c.f. per day. The plug was cleaned out and 5¾ inch casing is now standing cemented at 3,000 ft. Operator intends to gun perforate and complete well from the tested interval. Try is located in sec. 15-16n-1w, near the town of Colusa.

Sacramento County Test Abandoned

Amerada Pet. Corp. Gwerder No. 1, located in section 36-5n-5e east of the town of Thornton, was abandoned at 3,799 ft. Three and a half inch casing was cemented at 3,392 ft. and several tests made of gun perforation between the depths of 3,350 ft. and 3,390 ft. There was no fluid entry on any test. West of this well, in section 32-5n-5e, the company spudded Blossom Comm. No. 1 on December Second and is now drilling ahead below 500 ft.

COASTAL COUNTIES WILDCATS

Area	Well	No.	Section	Depth	Status
Casmalia	O. C. Field Gas. Corp., Casmite	3	13, 9-35	1850	Bailing
Lompoc	Fickert Oil Co., Ltd., Fickert	1	8, 7-33	800	Idle
Los Olivos	Hub Oil Co., La Laguna	1	7, 7-30	3580	Idle
Purisima Hills	Whittier Assoc., Barham	1	11, 7-32	4847	Pumping
S. M. Valley	Cont. Oil Co., Davis	1	28, 10-33		Grading roads
Sisquoc	J. I. Anderson, Elliott	1	6, 9-32	1780	Drilling
	Ventura County				
Bardsdale	San Marino Oil Co., Elkins	1	7, 3-19	2244	Testing
Camarillo	Camarillo Oil Co., Camarillo	2	32, 2-20	1836	Idle
	Jos. Shuck, Shuck	1	28, 2-20		Location
Del Valle	Herley-Kelley, Black	1	13, 4-18		Grade
Fillmore	Standard O. Co., Fillmore Comm.	2-1	24, 4-20	10735	Stdg. cem.
Happy Camp	Cal Camp Oil Corp., Harrington	1	21, 3-19		Location
Oxnard	Edward F. Delaney, Todd	1	6, 1-21	3292	Drilling
	Exeter Oil Co., Ltd., Lennox	2	6, 1-21	2572	Cleaning out
	Hub City Pet. Co., Chase	1	6, 1-21	1955	Idle
Piru	Pac. West. Oil Corp., Temescal	17	4, 4-18	2930	Drilling
Santa Paula	J. J. Stevens, Corehole	1	31, 4-20	2367	Drilling
Sespe	Merchants Pet. Co., Cochrane	7	1, 4-20	1472	Drilling
	Volunteer Pet. Co., Tar Creek	3	28, 5-19	1306	Cleaning out
Shiells Canyon	Los Nietos Co., Elkins	2-1	5, 3-19		Location
Simi	Mayo Oil Co., Montgomery	1	16, 2-18	1530	Drilling
South Mt.	F. E. Fairfield, S. M.	1	19, 3-20	4991	Rng. liner
Timber Canyon	Henderson-Ortez Oil Co., O'Leary	1	29, 4-20		Rigging up
Wiley Canyon	Wilshire Oil Co., Ventura Realty	1	1, 3-19	3748	Drilling

NORTHERN COUNTIES WILDCATS

County	Well	No.	Section	Depth	Status
Butte	Richfield Oil Corp., Chico	1	17, 21n-1e	6763	Drilling
Colusa	Gen. Pet. Corp., Capital	1	15, 16n-1w	3460	Testing
	Standard Oil Co., Oursan Comm.	1	28, 2n-3w	4110	Drilling
Glenn	Gen. Pet. Corp., Orland Comm.	8-1	11, 21n-3w		Ceilar
	Richfield Oil Corp., Afton Comm.	1	2, 18n-1w	114	Drilling
Monterey	Royalty Service Corp., Federal	1	21, 24s-10e	7673	Abandoned
Sacramento	Amerada Pet. Corp., Gwerder	1	36, 5n-5e	3799	Abandoned
San Joaquin	Amerada Pet. Corp., Blossom Comm.	1	32, 5n-5e	231	Drilling
	Richfield Oil Corp., East Stockton	1	5, 1n-8e	4682	Drilling
	Standard Oil Co., Blewett Comm.	3	23, 3s-6e	5257	Abandoned
	Standard Oil Co., Fairoaks Comm,	1	19, 1n-7e		Idle
San Luis Obispo	Los Nietos Co., Scott	1	5, 31s-13e	3155	Stdg. cem.
Solano	Standard Oil Co., Honker Comm.	1A	25, 3n-1w	8304	Prep. to redrill
	Standard Oil Co., A. O. Stewart	1	25, 3n-1w	7915	Drilling
	Standard Oil Co., Suisun Comm.	3	5, 3n-1w		Location
Sutter	Shell Oil Co., Buttes Comm.	C-1	12, 16n-1e	6565	Abandoned
Tehama	Petrol Prod. & Ref. Corp., Donna	1	6, 23n-6w		Location
Yolo	Empire O. & G. Corp., Porterfield	1	18, 10n-2w		Location

Richfield Spuds Glenn County Test

Richfield Oil Corp. Afton Comm. No. 1-1 spudded December Second and is now drilling ahead in sand and shale below 500 ft. The well is being drilled in section 34-19n-1w, approximately 4 miles north of the town of Afton. Hole will be drilled into the Cretaceous.

Contra Costa Cat Continues Coring

East of the town of Richmond in the Pinole area, Standard Oil Co. is drilling ahead and taking spot cores below 4,200 ft. in Oursan Comm. No. 1. Located in section 6-1n-3w well is classified as a "no dope" hole by the operator. There is no information available on the section being penetrated.

Bradley Test Abandoned

Royalty Service Corp. Federal No. 1, located approximately 5 miles southwest of the town of Bradley in section 21-24s-10e of Monterey county, has been abandoned at a depth of 7,673 ft. Hole was bottomed in hard brown Monterey shale the top of which was found at about 2,800 ft. A formation test was made of a fractured zone near bottom which showed a fluid recovery of muddy fresh water.

Standard Abandons Vernalis Gas Test

Northwest of the Vernalis Gas field, Standard Oil Co. has abandoned Blewett Comm. No. 3. Hole was drilled and cored to a total depth of 5,257 ft. A formation test made near bottom recovered muddy salt water, no gas or oil. Try is located in section 23-3s-6e.

Purisima Hills Cat Produces

In the Purisima Hills area of Santa Barbara county, Whittier Associates Barham No. 1 is currently pumping 18 barrels net per day of 15 gravity oil and an 85 per cent water cut. Located in section 11-7n-32w hole was drilled and cored to a total depth of 4,847 ft. and plugged back to 3,059 ft. Production is coming from fractured Monterey shale between the depths of 2,643 ft. and 3,059 ft.

Fillmore Test Sets Coring

Standard Oil Co. Fillmore Comm. No. 2-1, is preparing to core ahead after setting a protective string of seven inch casing at 10,728 ft. At present well is bottomed in Pico shale at 10,735 ft. Showings sufficient to justify the expense of running a test have been reported twice. The first at 6,850 ft. and the second at 7,425 ft. Only meager showings of oil and gas were recovered in each test. The setting of this protection string indicates that hole will be carried considerably deeper. Try is located in section 24-4n-20w about one mile northwest of the town Fillmore.

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San Joaquin Valley

North Coalinga Cat Abandoned

Approximately one mile north of the producing limits of the old Coalinga field Wilshire Oil Company has abandoned Imperial No. 1. Located in section 34-18s-15e hole was bottomed in hard Kreyenhagen shale at 2250 ft. The Temblor sand was found to be barren at this location. Hole was abandoned November 25, 1943.

Raisin City Extensions

Shell Oil Company has staked location for San Joaquin No. 2-1, 3300 ft. north and 660 ft. west from the southeast corner of section 9-15s-17e. This location falls about a mile and a half northwest of the nearest producing well in the field. Hole will be drilled into the Cretaceous which should be found in the neighborhood of 7000 ft.

On section 29-15s-18e, southeast of the field, the Pauley brothers are attempting to effect a water shut off in their well No. 21-29. Hole was drilled to a total depth of 4844 ft. and plugged back to 4820 ft. Seven inch casing was cemented at 4822 ft. after an open hole test showed an estimated blow of 3,000 to 6,000 m.c.f. with considerable condensate. The lower portion of the zone was gun perforated from 4813 ft. to 4817 ft. These perforations proved to be wet when tested. The operator has now plugged back to 4802 ft. and is preparing to perforate higher.

Edison Test Setting Casing

J. Paul Getty Portals No. 4, located in section 5-30s-29e, is running casing to set at 4010 ft. Hole was drilled and cored to a total depth of 4079 ft. Top of the oil sand was found at 4020 ft.

McClung Test Redrilling

Continental Oil Company K.C.L. No. H-1, located in section 18-30s-26e south of the Strand field, cored to a total depth of 8495 ft. in gray sand and shale. Hole has now been plugged to 6733 ft. and a whipstock is being run preparatory to redrilling. The operator plans to recore and test the shaley oil sand found in the original hole between the depths of 8225 ft. and 8250 ft.

Richfield Explores T· ›n Structure

chfield Oil Corp. Tejon No. 6 is prospecting ahead at 2700 ft. Hole is now 300 ft. deeper than the discovery well Tejon No. 5. Top of the Chanac oil sand was found at 2100 ft. approximately 60 ft. higher than it was found in the discovery well. The company intends to explore to the base of the Chanac which is expected between 2800 and 2900 ft. Well is located in section 35-11n-19w about 900 ft. due south of Tejon No. 5 which is currently pumping a steady 50 barrels per day of 18 gravity oil.

G. P. Develops New Field

The Huron field, recently discovered by the General Petroleum Corp., is scheduled for rapid development. Rig is being built for Burrel No. 48-35, while foundations are already in for Postal No. 66-35. Both are located in section 35-16s-18e and are westerly and easterly offsets, respectively, to the discovery well Burrel No. 68-35 which is currently flowing at a 200-barrel per day rate through a restricted bean. The new field is located midway between the Riverdale and Raisin City fields.

SAN JOAQUIN VALLEY WILDCATS

Area	Well	No.	Section	Depth	Status
	Fresno County				
Coalinga	The Texas Co., S.P.	58-21	21, 19-16	8115	Drilling
	Wilshire Oil Co., Imperial	1	34, 18-15	2250	Abandoned
Jacalitos	Standard Oil Co., Well	67-17E	17, 21-15	3610	Drilling
	Standard Oil Co., Wells Fargo	1	30, 21-15		Location
Jamesan	Amerada Pet. Corp., Mendota	53-12	12, 14-16	4107	Drilling
Lanare	Amerada Pet. Corp., Cal.-Lds	65-15	15, 17-18	601	Drilling
	Superior Oil Co., Maxfield	41-21	21, 17-18	8785	Drilling
Nicholson	Shell Oil Co., Inc., S.P.	73-35	35, 15-15	5737	Drilling
Polvadero	Standard Oil Co., Bourdieu	1A	1, 21-16	10290	Testing
Raisin City	Pauley, E. W. & H. R., Well	21-29	29, 15-18	4844	Cementing
	Shell Oil Co., Inc., San Joaquin	2-1	9, 15-17		Location
Riverdale	Amerada Pet. Corp., Furtado	55-36	36, 17-19		Rig
	Kern County				
Belridge—South	C.C.M.O. Co., Temblor	36-1	36, 28-20		Foundation
Comanche Point	T. W. Burnham, Chiquita	2	34, 12-19	2250	Idle
Cymric	Honolulu Oil Corp., Well	32	25, 29-21		Location
	Standard Oil Co., McPhee	37	36, 29-21	7810	Drilling
Edison	Tracy Harkness Seale	2	5, 30-29	1890	Drilling
	J. Paul Getty, Portals	4	5, 30-29	4079	Rng. casing
	Seaboard Oil Corp., Garrison-Davis	1	30, 29-29	2045	Drilling
Elk Hills	Capital Co., Tupman	1	24, 30-24		Location
	Pacific Western and G. F. Getty, Transport	64	26, 30-24	9265	No report
Grapevine	Kern Line Oil Co., Well	1	19, 11-19	9200	Cleaning out
McClung	Continental Oil Co., KCL	H-1	18, 30-26	8495	Redrilling
	Continental Oil Co., Easton	1	33, 29-26		Rigging up
McKittrick	Terry, George, Well	1	18, 30-22		Location
	Standard Oil Co., Well	113-7	7, 30-22		Rigging up
	Standard Oil Co., Well	22-35	35, 30-22	2675	Drilling
Midway	C.C.M.O. Co., Well	26	1, 32-22	3052	Abandoned
Mt. Poso	British-American, Recovery	2	34, 26-28	1309	Pumping
	Da-Me Oil Co., Well	4	27, 26-28	1369	Pumping water
	D. W. Vedder, Well	1-18	18, 27-28	2470	Deepening
	D. W. Vedder, Glide	29-3	29, 27-28	2397	Abandoned
	J. T. Wilcox, Zanetti	1	17, 28-28	3015	Idle
Mt. View	Di Giorgio Fruit Corp., Well	48-10	10, 21-29	5910	Drilling
Poso Creek	Butler Bros. Oil Co., Butler	1	14, 27-27	1293	Bailing
	Pac. West'n O. Corp., Enas Fee	26	21, 27-27	106	Drilling
	Pac. West'n O. Corp., Enas Fee	38A	21, 27-27		Foundation
Rio Bravo	Union Oil Co., Kernco	81-8	8, 29-25	10165	Abandoned
Rosedale	Western Gulf Oil Co., KCL-A	37-14	14, 29-26		Grading
Round Mt.	Bandini Pet. Corp., Signal Mills	3	24, 28-28	2441	Testing
	Gen. Pet. Corp., Malta	1	14, 28-28	2838	Testing
	The Texas Co., KCL	1-13	13, 28-28		Location
	Wilshire Oil Co., Hartfield	1	32, 28-29		Grade
Shafter	T.W.A. Oil Co., Shafter Comm.	86-7	7, 28-25		Rigging up
Tehachapi	E. G. Cummings, Poor Boy	1	31, 32-32	1319	Drilling
Temblor	B. F. Delanty, Well	69-A-1	36, 29-20	225	Idle
	Madera County				
Herminghaus	The Texas Co., Gill	61-20	20, 13-16	710	Drilling
	Shell Oil Co., Inc., Gill	38-18	18, 13-16	5966	Testing
Firebaugh	The Texas Co., Moffat	55-7	7, 12-15		Rig
	Merced County				
Los Banos	Shell Oil Co., Inc., Alberti	75-11	11, 10-11	2810	Drilling
	Tulare County				
Terra Bella	Richfield Oil Corp., Terra Bella, Comm.	1-1	19, 22-27	2353	Abandoned

Mount Poso Area Becoming Active

The area around the old Mount Poso field is beginning to show considerable activity. West of the field in section 18-27s-28e Dwight G. Vedder is pulling the liner from his Well No. 1-18. The hole was drilled and cored to 2470 ft. Top of the Vedder oil sand was found at 2440 ft. A water string and a liner was run and well placed on the pump. After pumping a small amount of oil well started blowing gas which built up to a maximum rate of 3,800 m.c.f. The well has now been killed and preparations are being made to deepen. Northwest of the field in section 36-26s-27e G. C. Nelson has staked location for N. H. No. 1. Southwest of the field Dwight G. Vedder Glide No. 29-3 has been abandoned. Located in section 29-27s-28e hole was cored to 2397 ft. and found the Vedder sand to be barren at this location. This operator is building rig for Well No. 1-34 in the southwest quarter of section 34-26s-28e, northeast of the field. South of the field in section 17-28s-28e, J. T. Wilcox Zanetti No. 1 is standing temporarily idle at 3015 ft.

Polvadero Cat Testing Eocene

Standard Oil Co. Bourdieu No. 1-A is preparing to make a formation test of oil stained Eocene sand found from 10,264 ft. to 10,290 ft. Located in section 1-21s-16e, between the Kettleman North Dome and Pleasant Valley fields, well found the top of the Grit zone at 10,257 ft. and the top of the Eocene sand at 10,264 ft. Present depth is 10,290 ft. Current plans call for taking in a little more penetration before attempting to place well on production .

Greeley Outpost Completed

Standard Oil Co. Wegis Comm. No. 1, southeasterly outpost to the Greeley field, was completed December Third, for an initial production of 300 barrels per day. Located in section 21-29s-26e hole was bottomed in oil sand at 11,600 ft. Seven inch casing was cemented at 11,445 ft. and a 4¾ inch perforated liner landed at 11,599 ft. The completion of this well extends the known producing limits of the Greeley field approximately one half mile to the southeast.

Madera County Cat Shows Gas

Shell Oil Co. Gill No. 38-18, located on section 18-13s-16e in the Herminghaus area, is running casing to cement at 4415 ft. The hole was drilled and cored to a total depth of 5966 ft. and plugged back to 4406 ft. from which depth an attempt will be made to place well on production. A formation test previously made of this zone, from 4417 ft. to 4471 ft., resulted in a blow of 11,300 m.c.f. of dry gas.

Outpost Abandoned

Tide Water Associated Oil Co. KCL No. 58-8, outpost well east of the Strand field, has been abandoned. Located in section 8-30s-26e hole was drilled and cored to a total depth of 8262 ft. The Stevens zone was topped at 7920 ft. and found to be wet at this location. Northwest of this well rig has been built for KCL No. 36-8. This project has been suspended and will not be drilled at this time.

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Standard Completes Pleasant Valley Well

Standard Oil Co. PVF No. 1-28F was completed December 3 for an initial output of 1002 barrels of 28 gravity clean oil. Located in section 28-20s-16e hole was drilled into the Pleasant Valley oil sand at 8937 ft. and bottomed at 9175 ft. The 8⅝ inch casing was cemented at 8941 ft. and a 5¾ inch perforated liner landed at 9174 ft.

Western Gulf Plans Rosedale Cat

Midway between the Greeley and Fruitvale fields, Western Gulf Oil Co. is grading roads for K.C.L.-A No. 37-14 Reported to be a Miocene test, well will be located, 990 ft. north and 1650 ft. east from the southwest corner of section 14-29s-26e.

Richfield in Shale at North Belridge

Richfield Oil Corp. Belridge No. 4 northwesterly extension test of the North Belridge field is drilling ahead and taking spot cores of shale at 9335 ft. The well is located in section 21-27s-20e, approximately one-half mile northwest of the nearest producing well. An open hole production test was made of the zone from 8315 ft. to 8601 ft. The well flowed clean oil for two days at a 550 barrel per day rate. A later test made of the zone from 8795 ft. to 8820 ft. recovered all salt water. Southeast from this well Tide Water Assoc. Oil Co. has spudded its well No. 34-21 and is now drilling ahead below 500 ft.

Rio Bravo Test Now Abandoned

Union Oil Co. Kernco No. 81-8, located in section 8-29s-25e approximately 2 miles southwest of the Rio Bravo field, is abandoned at 10,165 ft. Top of the Stevens sand was found at 9680 ft. Strong ditch showings of both oil and gas persisted from there to bottom. Several tests were made above 9700 ft. with recoveries consisting of muddy salt water and a small amount of gas.

Cymric Test Continuing

Standard Oil Co. McPhee No. 37, deep test well in section 36-29s-21e, is spot coring ahead in hard shale and sand below 7800 ft. The company considers this a "no dope" hole and is not releasing any information on the section penetrated to date.

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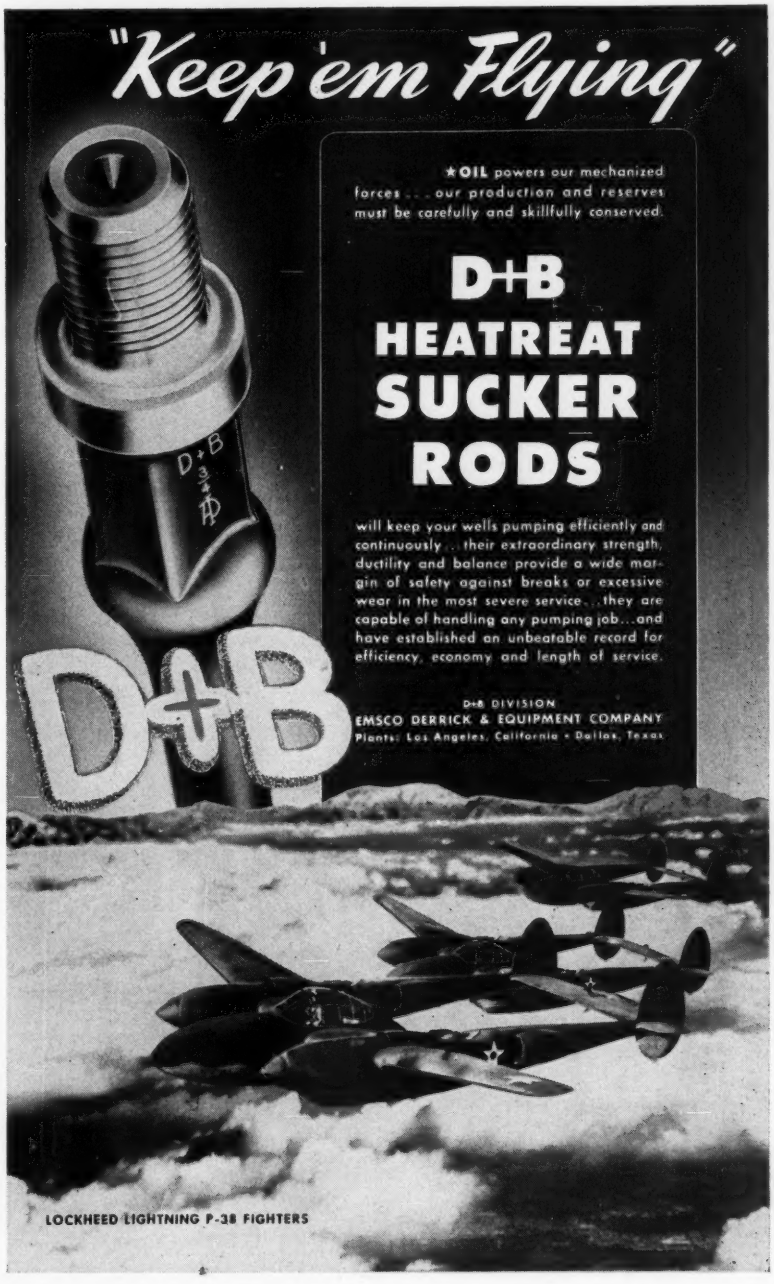
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A. I. M. E. Junior Members Hear Dr. Jakosky

On November 11th, thirty five Junior Members of the Southern California Section of the American Institute of Mining and Metallurgical Engineers met at Cole's Cafeteria in Huntington Park. They were addressed by the prominent engineer, Dr. J. J. Jakosky, formerly Dean of the School of Engineering at the University of Kansas, and currently Assistant to the President of the University of Southern California. The subject was, "Future Oil Supply."

Dr. Jakosky pointed out the decline of oil field discoveries because of the apparent scarcity of undiscovered reservoirs which can be easily defined by present geophysical methods. The decline in petroleum reserves can be made less critical by three developments which may be equally as effective as discovery of new reservoirs; (1) more efficient use of petroleum products by improved design of equipment and improved fuels, (2) substitution of fuels from sources other than naturally accuring fluid petroleum, and (3) inventions throughout the world which may utilize other means of power generation. Considerable discussion was aroused from the audience regarding these points.

This meeting rounded out a verv successful year under the Chairmanship of Marshall C. Turner and the able assistance of John T. Sinclair and Charles E. Smith. The caliber of the monthly meetings was indicated by the very good attendance despite the demands on the time of the engineers and the restrictions on transportation.

John T. Sinclair, Petroleum Engineer, Tide Water Associated Oil Company, was unanimously elected Chairman of the local Junior Section for the year of 1944.

Union Testing Chapman Zone

Union Oil Co. Chapman No. 47, secondary recovery well in the west end of the field, has been bottomed in shale at 4420 ft. A combination string of 5½-inch casing including 241 ft. of perforations (plugged with sulphur) was landed at 4413 ft. and cemented through perforations at 4167 ft. Now preparing to make a production test of the Chapman zone by gun perforating the 5½-inch casing between the depths of 3388 ft. and 3410 ft. Well will be produced for a while before any attempts are made to inject gas or water into the formation.

Tejon Field Second Test

Richfield Oil Corp. Tejon No. 6 second well in the newly discovered Tejon field is taking the first core at 2107 ft. Try is located in section 35-11n-19w approximately 1000 ft. south of the discovery well, Tejon No. 5, which has settled down, is currently pumping 50 barrels per day of 18 gravity oil cutting 3 per cent.

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CLASS II GROUP E Metal dusts—magnesium, aluminum, etc.	1/8 to 75 hp	1/2 to 60 hp	1/20 to 10 hp	1/20 to 30 hp
CLASS II GROUP F Coal dust, coke dust, etc.	1/8 to 600 hp	1/2 to 250 hp	1/20 to 10 hp	1/20 to 30 hp
CLASS II GROUP G Grain dust, etc.	1/8 to 600 hp	1/2 to 250 hp	1/20 to 10 hp	1/20 to 20 hp

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At the San Francisco Advertising Club's "Football Luncheon," an annual presentation of Tide Water Associated Oil Company, P. E. Allan, General Sales Manager of the Company discussed the season's football sportcasts with two of the honored guests, venerable, 81 year old Amos Alonzo Stagg, famed mentor at College of the Pacific, and Stub Allison, University of California's popular coach. Mr. Stagg, whose team set a record pace for West Coast football this year, was given a special award as "The Coach Who Did The Most For Pacific Coast Football in 1943."

This year's luncheon centered on the theme, "Football in Wartime" with a special feature on "Women in Football."

Tidewater Associated Oil Company's football sportscasts have been on the air uninterruptedly for 18 years, under supervision of Harold R. Deal, Manager of Advertising and Sales Promotion.

Nomads November Meeting

A number of interesting talks by members and others recently back from foreign operations featured the regular monthly dinner meeting of the Los Angeles Chapter of Nomads held Wednesday, November 10, 1943 in Los Angeles. Following the usual get-together, dinner was served to the Nomads and guests and the meeting then opened by President Henry Pullman with the Pledge of Allegiance to the Flag.

The president then turned the meeting over to the Master of Ceremonies for the evening, Pete Maxfield. Two new members were inducted by Acting Master of Ritual, Charles H. Toll, Jr. and Acting Induction Master, Custer A. Morrow, who were appointed to fill these offices because of absence of the regular Ritual Committee members. They were ably aided by Elmer Decker and Frosty Martin. The two members inducted were:—Jack S. Smith, Regular Member and Owen P. Lake, Associate Member. Bart Gillespie, who was present after a period of active duty in the Aleutian Islands as Commander in the U. S. Navy, was then presented with his certificate of Honorary Membership which had been conferred on him by the Board of Regents a few months before. He told about the work of ex-oil men who were with him in the Aleutians and had Tommy Johnston repeat one of his funny stories.

Elmer Smith was called upon for a few words after his recent visit to South American countries. He was unable to speak, however, because of war restrictions. John Dodge, who recently returned from a trip to Mexico City, then gave a talk on the present petroleum situation in Mexico. Following this, Phil McConnell of the California Arabian Standard Oil Company, who is on leave from Saudi Arabia to which he will shortly return, spoke interestingly on general conditions in Arabia although he could not tell much about the oil situation in that area because of war restrictions.

W. C. "Pete" Maxfield

The speaker of the evening was Capt. Paul Perigord who spoke on the war situation in general. Capt. Perigord was a captain in the French Army during the First World War and since that time has mingled with international figures the world over. He is at present Professor of Civilization at U. C. L. A.

The foreign visitors included, in addition to Phil McConnell, George Dickinson and L. C. Stevens of C. P. C. from Venezuela; Elmer Nunez of the Gulf Oil Corp. from Venezuela; Charles M. Lamar of the New Zealand Petroleum Co.; P. M. Bowen of the Cia Petroleo Shell de Colombia; J. S. Aston of the Texas Company from Venezuela; A. F Driskill of Iraq Petroleum Co. who is on his way back toIraq;andAlfonso Chiriboga with the government of Ecuador.

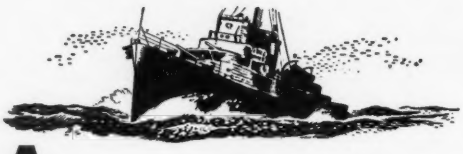
The Navy knows the Answers

In our Navy, the world's most formidable fighting machine, Diesel-powered craft of all kinds are lubricated with Standard of California's RPM DELO. The answers in this naval quiz tell you why. They'll solve your problems on how to squeeze more efficiency out of your Diesels—and cut maintenance costs.

Q. Can a submarine drown in air?

A. Yes. Her Diesels "breathe in" great quantities of air which cause ordinary oils to turn gummy, stick rings and hasten engine failure. In today's subs, RPM DELO eliminates this ring-sticking, reduces sludge and deposits—greatly increases cruising range.

Q. How do you put a bone in the teeth of a DE?



A. Powerful Diesels put that speed wave under the bow of a Destroyer Escort. With RPM DELO lubricating her big engines and keeping them at top efficiency, a Destroyer Escort can sprint like a racehorse, even at the end of a long convoy trip.

Q. What is the most explosive part of a minesweeper?

A. Her engine. Thousands of times a minute, fierce explosions sear her cylinders. But they're safe with RPM DELO because it contains special additives that make it cling to hot spots, give constant point-of-wear protection, even under most severe conditions.

Q. What is the most important duty of a landing barge?

A. To keep in action—because a beachhead breakdown could be disastrous. RPM DELO in a landing boat's Diesel gives it extra protection against breakdowns. RPM DELO often cuts Diesel repair bills in half, doubles the time between overhauls, minimizes wear.

RPM DELO

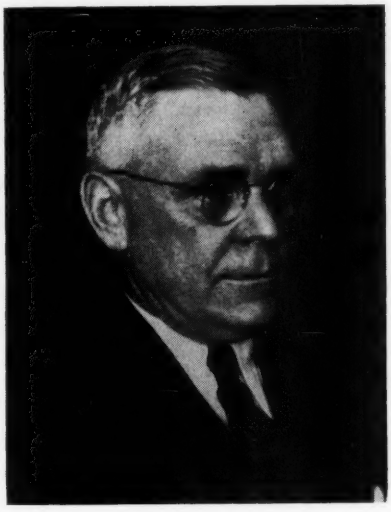
Standard Diesel Fuel is 100% distilled—"Vapor-clean" for long injector and fuel pump life. You get extra performance for your money—more complete combustion because of carefully controlled ignition quality, viscosity and volatility.

STANDARD OF CALIFORNIA

Mills Hammett, Well-Known Axelson Executive Dies at His Home in California

David Mills Hammett, vice president of Axelson Manufacturing Company, died the evening of November 30 at his home in Whittier, Calif. Death came as a result of complications from pneumonia, followed by a heart attack.

Mills Hammett was nationally-known in oil circles for his work as Mid-Continent sales manager of the Axelson Manufacturing Company, pioneer Los Angeles manufacturers of interchangeable plunger pumps and other oil field equipment.



Mills Hammett

Services were held Friday, Decembr 3, at Forest Lawn Memorial Park, Glendale, Calif. Mr. Hammett was 59. He was born in Pine Bluff, Ark., June 13, 1884.

Surviving are his widow, Mrs. Edna Hammett, of Los Angeles, Calif.; a son, Mills, Jr., of Glendale, Calif., and a daughter, Mrs. John Furneaux, and granddaughter, Eunice May Furneaux, both of Bakersfield, Calif.

Mr. Hammett was already well-known in oil circles in 1922 when he joined the Axelson Manufacturing Company as a salesman. His rise was rapid, and soon he was appointed district sales manager. In 1927 he was made Mid-Continent sales manager, and in 1933 was elected vice president of the company.

Mr. Hammett's office was in Tulsa, Okla., until 1939, when he was transferred to the Los Angeles plant.

Ralph Musser Dies Suddenly

Oil executives and transportation men on the Pacific Coast were saddened by the death of Ralph T. Musser, who passed away at the Good Samaritan Hospital in Los Angeles on November 11th. Mr. Musser came to California from Dallas, Texas, in 1923, as a representative of the General American Transportation Company and had served that company as Pacific Coast Manager for twenty years at the time of his death. He was also President of the Western Tank Car Co., an affiliated organization. He was a member of the American Petroleum Institute and served on several industry committees connected with the transportation of petroleum products. He was a member of the Jonathan and University Clubs of Los Angeles and the Family Club of San Francisco, was a Mason, member of Temple Lodge Number 299 of Kansas City, a Knight Templar and a Shriner. A bachelor, he had lived at the Jonathan Club for many years. He had suffered a slight heart attack in San Francisco on October 29th, but apparently was making a satisfactory recovery at the time of his sudden death. He was fifty-three years old.

He had, literally, a host of friends among oil men all over the United States but particularly in the West where he had served so long. He is survived by a sister, Mrs. M. L. Bettcher, of Dayton, Ohio.

Changes in OPA Tire Regulations

OPA Amendment No. 60 to Rationing Order 1-A, effective December 1, 1943, removes F war tires from Grade 1 and places them in Grade 3. Grade 3 certificates may now be honored for the F war tires. Amndment 61 to OPA Rationing Order 1-A, effective Dec. 1, 1943, permits the recapping of all size truck tires with truck camelback, without certificates . The amendment also allows the recapping of Twilight or branded tires. The branding of these tires with an "O" is to be eliminated.

L. A. City Council Approves New Drilling Site

The Los Angeles City Council voted on December 1 to order preparation of an ordinance permtiting the drilling for oil in an area east of Soto Street and north of Valley Boulevard adjacent to the old Ascot Speedway. This is the second wartime permit for oil drilling in closer-in sections of the City of Los Angeles. The first was the granting of a permit to drill for oil under Elysian Park.

Appointed Sales Manager

Effective November 26, 1943, Jack Manildi has been appointed Manager of Sales of Pacific Tube Company, whose plant in East Los Angeles is the first steel tube mill west of the Rocky Mountains.

Mr. Manildi is a native of California, born in Santa Cruz, and is a graduate of Pomona College. He has spent most of his business years in Southern California, having come to Pacific Tube Company after ten years in the oil industry, as a sales representative with Oil Well Supply Company, and previously with General Petroleum Corporation, which followed six years as Director of Athletics at Harvard Military Academy.

Jack Manildi

Pacific Tube Company, in recognition of this background, offers his services to the war effort, providing an emergency source of precision aircraft, mechanical and pressure tubing on the West Coast for requirements of the armed services, the Airframe Manufacturers, Lend Lease, the Synthetic Rubber and High Octane programs. Post-war application of such products for the West Coast will interest manufacturers of furniture, radios, refrigerators, bicycles and other users of high quality tubing.

New Crown Block For Portable Rig Is Latest Baash-Ross Development

A new crown block incorporating important advantages in portable rig operations has recently been developed by Baash-Ross Tool Company of Los Angeles. The block is more compact, and is so designed that simple over-and-over reaving of the drilling line is made possible. This feature eliminates cross-over of the lines and insures the traveling block rising and falling vertically without drift or "fleet angle," an important advantage in the cramped quarters of portable masts.

A valuable construction feature of the new block is that all sheaves are mounted in line, so that all lines are parallel and in the same plane as they feed to and from the block. This not only prevents traveling block drift, but also eliminates pull-back from the center of the hole and reduces the risk of striking the inside bracing of the rig or the finger board. Pipe handling is made easier, since the derrick man does not have to contend with a twisting block when catching pipe, and the floor men do not have to work against the pipe swinging off center.

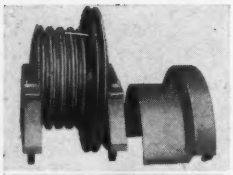


Figure 1. ABOVE BLOCK WITH COVER REMOVED SHOWING OFFSET ARRANGEMENT OF SHEAVE FOR OUTSIDE FAST LINE.

Figure 2. STRAIGHT-IN-LINE BLOCK FOR RIGS WITH FAST LINE INSIDE.

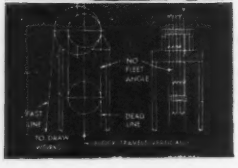


Figure 3. SHOWING ARRANGEMENT OF BAASH-ROSS TYPE DCO. CROWN BLOCK.

Two Styles

The new Baash-Ross Crown Block is made in two styles, type DCO and type DCS. Type DCS is designed for use where the fast line comes down the inside of the derrick, while type DCO is made for rigs where the fast line comes down to the draw works on the outside of the rig. In this latter type, the fast line sheave is larger in diameter than the others, and is mounted eccentrically with respect to the bearing shaft of the other sheaves. This maintains the inline feature of all sheaves on the inside, but offsets the larger sheave on the back side sufficiently to carry the fast line outside the derrick without use of auxiliary sheaves or complicated reaving. The fast line operates on this larger sheave, thus reducing the rotational speed of the fast line sheave instead of increasing it as with conventional auxiliary sheave arrangements. Figure 3 illustrates the type DCO Block installed in the derrick. Note how the larger sheave is tangent to the others on the deadline side, yet is sufficiently offset to carry the fast line completely clear of the derrick and down to the drawworks.

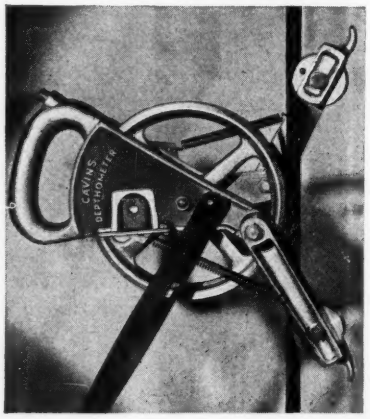
Unit Built

Another important feature of the Baash-Ross Block is its unit-built design, which assures simplicity of installation and rigid sheave alignment at all time. The tool can be quickly installed and removed as a unit. In addition, direct abutment of the inner bearing races serves to space the sheaves, and the conventional spacer plates are thus eliminated. This permits all crown block sheaves to be mounted with the same relative spacing as the traveling block so that lines do not fan out between them. Heavy duty double-row tapered roller bearings, individually lubricated and sealed against grit and moisture, are used. A close fitting guard completely covers the unit for full protection against the elements, and also serves to prevent the lines from jumping the sheaves. Sheaves are grooved for 1" or 1¼" lines, as specified.

More detailed information on this new Baash-Ross Crown Block can be obtained by writing direct to Baash-Ross Tool Company, 5512 Boyle Avenue, Los Angeles 11, California.

Depthometer For Stringing-in Measuring

Designed to measure quickly and accurately the actual depth of oil and gas wells, at all times and under all conditions on both rotary and cable tool rigs, the new Cavins Depthometer is being offered to the oil industry. Accurate measurements can be taken in very little more time than is required to run to bottom with a bailer, or other tool, and the Depthometer will be found invaluable in connection with bailing, swabbing and cleaning-out work.



The Depthometer utilizes the "friction" principle, but the method of application is entirely different from that of other mechanical devices heretofore offered. The main wheel is held tightly against the line by tension arms, and this uniform contact causes positive rotation of the wheel so that the possibility of human error has been practically eliminated.

Replacing the old stringing-in method of measurement which was slow, troublesome and often inaccurate and expensive in time and errors made, the Cavins Depthometer provides accurate measurements when used on all sizes of wire line from ½" to 1". The high quality counter will record accurately the depth position of the tool at all times, and will automatically compensate for any raising of the tools, as might happen when feeling for a pick-up, or similar operation. This device is made up of the minimum number of strong parts, and a substantial carrying case is provided. Other specifications can be secured by addressing the manufacturers, The Cavins Company, 2835 Cherry Avenue, Long Beach, California.